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A Grain, Oilseeds, and Livestock Model of Japan

Karen Liu

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A GRAIN, OILSEEDS, AND LIVESTOCK MODEL OF JAPAN. By Karen Liu. International Economics Division, Economic Research Service, U.S. Department of Agriculture. Washington, D.C. August 1985. ERS Staff Report No. AGES850627.

ABSTRACT

This report presents a grain, oilseeds, and livestock model of Japan (JPGOL). It describes the background, product coverage, and model structure of JPGOL. A computer-generated listing of the model is provided. The model includes equations for food demand, feed demand, crop and livestock supplies, stocks, trade, and supply and demand prices. The model takes into account cross-commodity effects on both the demand and supply sides of Japan's grain, oilseeds, and livestock complex. The report also discusses the policy analysis capabilities of the model and presents some results of model simulation.

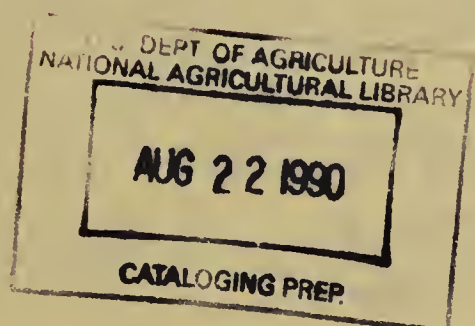
Keywords: Grain, oilseeds, livestock, Japan, JPGOL model, supply, demand, trade, price.

ACKNOWLEDGMENTS

The author thanks Ralph Seeley, Michael Lopez, William T. Coyle, Gary Williams, and Vernon Roningen for their review comments; Carol Stillwagon for statistical assistance; and Marie Kemp, Dorothy Maddox, and Verleece Brown for manuscript preparation.

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SUMMARY

Japan has relied heavily upon foreign suppliers, primarily the United States, to meet its expanding demand for food and raw materials. This is evidenced by Japan's increasing imports of feed grains and oilseeds, as well as livestock products, during the eighties. Because of Japan's importance in world agricultural trade and in U.S. trade, the trends and policies for Japan's agricultural commodities are a major concern of the world's major agricultural exporters. A grain, oilseeds, and livestock model of Japan (JPGOL) has been developed to evaluate the trends in Japan's grain, oilseeds, and livestock economy and to project alternative futures under different economic and policy assumptions.

The JPGOL model is an annual simulation model with 19 agricultural commodities. These commodities contributed more than 55 percent of Japan's gross farm income in 1981 and accounted for 51 percent of the value of Japan's agricultural imports in 1982. The model simulates production, consumption, stock changes, trade, and prices of Japan's grains, oilseeds, and livestock products. The overall structure of the JPGOL is primarily patterned after a version of a detailed standard GOL (grain, oilseeds, and livestock) country model for the United States with modifications to conform to Japan's agriculture. The model consists of eight major equation groups: (1) supply of crops, (2) supply of livestock products, (3) food and nonfeed demand, (4) derived feed demand for grains and meals, (5) stock demand, (6) trade quantity, (7) marketing margins, and (8) price linkage relations. The functional form for most model equations is nonlinear with constant elasticities over all price ranges.

The model explicitly takes into account the cross-price effects among commodities on both the demand and supply sides. The model is designed as a tool to analyze alternative trade policies such as tariff and nontariff trade restrictions. The model can be simulated as a stand-alone country model, or as a component of the U.S. Department of Agriculture's world grain, oilseeds, and livestock (GOL) agricultural trade model.

A Grain, Oilseeds, and Livestock Model of Japan

Karen Liu

INTRODUCTION

Japan is a major agricultural importing nation, with its imports accounting for about 6.9 percent of world agricultural trade in 1982 (table 1). Because of its limited land resources suitable for agriculture, Japan has had to rely on foreign suppliers, primarily the United States, to meet its expanding demand for food and raw materials. Japan's reliance on foreign supplies of agricultural products has increased as per capita income has continued to grow, the role of livestock products in the Japanese diet has increased, and the domestic production of several major agricultural commodities has declined. This is especially applicable to rising imports of feed grains and oilseeds as Japan's livestock industry continues to expand.

The growth of Japan's livestock economy and the resulting increase in feed grain and oilseed demand have important effects on world markets. The trends and policies in Japan's agricultural commodities have become one of the main concerns of the world's major agricultural exporters. In order to evaluate the trends in Japan's grain, oilseeds, and livestock economy and to project its future under alternative policy options, a grain, oilseeds, and livestock model of Japan (JPGOL) was developed.

This report documents the model. A review of the trends in food consumption and supply in Japan is followed by an overview of the Japanese grain, oilseeds, and livestock sectors in terms of production and demand trends, and trade patterns for the various commodities included in the model. The specification of the model is presented, followed by selected simulation results.

TRENDS IN FOOD CONSUMPTION AND SUPPLY IN JAPAN

A major reduction in rice consumption and an increase in livestock product consumption have been the principal changes in Japan's food consumption during the last two decades. While rice is still the main staple food, accounting for 30 percent of daily per capita caloric intake in 1980, food consumption has been shifting towards fruits, vegetables, and red meat. Fish is widely consumed. Total daily per capita caloric intake for Japan was 2,300 in 1960, 2,471 in 1970, and 2,512 in 1980 (table 2). Rice accounted for 47 percent, 37 percent, and 30 percent of caloric intake for those years, respectively. The proportion of calories coming from livestock products was 8 percent, 19 percent, and 26 percent, respectively. Per capita caloric intake will remain at an estimated level of 2,500 calories per day but the trend toward reduced

Table 2--Japanese caloric intake per person per day

Commodity	1960	1965	1970	1975	1980	1981	1982
	<u>Calories</u>						
Total	2300.0	2424.2	2471.2	2467.2	2512.1	2520.4	2591.2
Cereals	1403.1	1325.5	1237.7	1174.5	1100.7	1083.1	1093.3
Rice	1071.2	1023.8	914.3	844.4	759.0	748.2	745.5
Wheat	243.4	262.0	298.5	305.3	313.6	309.1	321.0
Barley	36.3	18.1	6.7	9.0	4.8	3.4	3.6
Sweet corn	12.2	6.4	10.4	10.0	16.4	15.5	16.4
Potatoes and sweet potatoes	90.5	32.9	38.8	38.7	41.0	41.6	43.4
Starches	62.4	72.6	75.7	69.5	106.5	116.8	119.3
Pulses	108.0	99.2	103.4	99.1	90.3	89.7	99.4
Soybeans				61.8	56.6	56.9	65.8
Others				37.3	33.7	32.8	33.6
Vegetables	69.5	113.4	93.3	86.6	92.3	91.9	78.6
Fruits	29.9	40.4	52.3	58.0	54.0	53.4	54.0
Meat	19.3	56.3	78.0	102.9	143.6	144.0	143.0
Beef	4.3	6.1	11.6	14.2	20.1	20.8	26.5
Pork	4.6	24.0	44.4	61.3	91.4	90.5	69.4
Chicken		6.1	12.9	17.9	26.2	26.8	39.7
Whale				3.3	1.3	1.2	1.2
Eggs	20.2	37.8	63.1	59.8	62.5	63.0	64.7
Cow milk and milk products	41.4	59.2	80.9	86.0	100.5	104.8	108.5
Marketed for fluid milk				45.5	54.9	56.2	58.2
Marketed for milk products				39.4	44.9	47.9	49.6
Fish and shell- fish	76.6	82.1	92.2	99.3	102.9	103.8	127.6
Fresh, chilled, or frozen				38.4	40.6	40.8	48.1
Salted, dried, or smoked in airtight containers				58.9	58.6	59.0	74.0
Sugar	161.5	193.5	281.6	274.3	242.9	234.8	235.3
Fats and oils	106.4	167.6	228.7	276.6	336.4	355.6	376.7
Vegetable oils and fats			175.4	222.5	272.7	293.6	315.1
Animal oils and fats			53.3	54.1	63.7	62.0	61.6
"Miso" bean paste	39.8			13.6	26.1	25.8	30.5
Soy				13.6	12.4	12.1	16.8

Source: The Statistical Yearbook of the Ministry of Agriculture, Forestry, and Fisheries of Japan; various issues.

rice consumption and increased livestock product consumption will continue. Due to the rising demand for livestock products, Japan's livestock industry has emerged as a very important and growing sector of agriculture. Japan's livestock industry depends heavily on imported feed.

Because agricultural land suitable for growing crops and grazing is severely limited, Japan has had to rely on foreign suppliers, primarily the United States, to meet its expanding demand for food and raw materials. Imports of feed grains, soybeans, meat, and meat products have greatly increased since 1960 (table 3).

Although Japan has relied heavily upon the world market for food and raw materials, it still strives to maintain as much self-sufficiency in food as possible (table 4). 1/ Japan was about 72 percent self-sufficient in all foods in 1979. This included more than 100 percent in rice; more than 90 percent in vegetables and eggs; more than 80 percent in dairy, meat, and fruit; 28 percent in feed; and less than 10 percent in wheat and soybeans (3). 2/ Japan's self-sufficiency in all foods fell from 90 percent in 1960 to 78 percent in 1970 and 72 percent in 1979.

THE GRAIN, OILSEEDS, AND LIVESTOCK SECTORS OF JAPAN'S AGRICULTURE

Production, consumption, and trade of the various grain, oilseed, and livestock commodities are reviewed briefly here. 3/

Crop Sector

Rice is the most important crop for Japanese agriculture. In 1979, 57 percent of Japan's farmers gained at least three-fifths of their cash receipts from rice. 4/ In 1981 rice accounted for 32 percent of farm output. Since 1966 rice production has tended to exceed food consumption. As a consequence, the percentage of food use in total domestic rice disappearance has declined (96.8 percent in 1955, 90.5 percent in 1970, 82.4 percent in 1980). The percentage of industrial use of rice has consistently increased, from 3.3 percent in 1955, to 5.9 percent in 1970, and 6.3 percent in 1980. Feed use of rice was negligible until 1969. However, due to a government program to dispose of surplus stocks, feed use increased sharply in 1969-73 and 1980-84. The importance of rice in Japanese agriculture has declined in recent years. The production of rice has fallen in absolute terms and in relation to that of fruits, vegetables, and livestock (table 5).

Wheat consumption in Japan has risen substantially since the end of World War II. Per capita consumption has increased about 22 percent since 1955. Per capita consumption was 44.5 kilograms (kg) in 1960, 50.0 kg in 1975, and 51.8 kg in 1980. This reflects a decline in per capita rice consumption during the same period.

Consumption of wheat increased, but production declined. Although wheat yields rose steadily over the past two decades, the wheat area fell by

1/ Self-sufficiency is defined by the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) as the ratio of domestic production to total domestic utilization.

2/ Numerals in parentheses refer to items in references.

3/ For additional information about Japan's rice and feed-livestock economy, see (1 and 2).

4/ Calculated from MAFF, Statistical Yearbook, 1979/80, pp. 16-17.

Table 3--Japan's agricultural imports

[illegible]

Source: FAO Trade Yearbook (various issues).

Table 5--Agricultural production index

Commodity	1960	1965	1975	1980	1981	1982
Agriculture (total)	79.5	89.0	105.6	104.2	105.9	108.0
Crops (total)	97.3	96.3	104.4	92.6	95.3	97.0
Rice	100.9	97.7	103.5	78.1	82.7	82.3
Wheat & barley	333.0	230.4	47.9	101.4	100.9	119.4
Coarse grains	699.7	286.5	64.9	66.0	66.1	72.6
Pulses	176.3	121.7	82.4	87.2	87.1	95.2
Potatoes	149.7	138.7	82.4	87.2	87.1	95.2
Green vegetables	72.7	84.1	103.4	109.9	111.9	112.9
Fruits	56.6	69.3	122.9	121.2	114.5	123.9
Industrial crops	90.6	113.4	103.4	102.8	100.7	102.7
Others	130.4	109.3	74.5	52.0	59.9	57.7
Sericulture (total)	98.9	94.2	81.7	65.6	58.3	57.0
Livestock (total)	36.4	68.0	100.7	126.3	125.1	129.0
Dairy cattle			106.3	123.2	121.1	118.5
Beef cattle			121.4	130.5	135.7	142.6
Swine			120.2	168.8	157.8	162.7
Layers			90.2	93.7	99.9	103.4
Broilers			138.9	192.3	191.3	198.2
Hen eggs			102.1	113.9	113.8	117.0
Cow milk			104.6	136.6	138.9	142.2

Source: The Statistical Yearbook of the Ministry of Agriculture, Forestry, and Fisheries of Japan; various issues.

68.3 percent. As the gap between consumption and production widened, the quantity of wheat imported by Japan increased.

Japan is an important wheat customer for major wheat exporters such as the United States, Canada, and Australia. Wheat exports to Japan accounted for 8.1 percent of total U.S. wheat exports, 8.2 percent of Canadian wheat exports, and 10.0 percent of Australian wheat exports in 1980.

Feed grain demand in Japan has been closely associated with the expansion of the Japanese livestock industry. Total feed grain consumption has increased six times from 1960 to 1980, with the largest increases being in corn and grain sorghum. While the demand for feed grains has grown at a rapid rate, the quantity of feed grains produced in Japan has declined.

The United States is the leading exporter of feed grains to Japan. The United States supplied 68 percent of the corn imported by Japan in 1970, 82 percent in 1975, and 97 percent in 1984. The U.S. share of Japanese sorghum imports rose from 60 percent in 1970 to 87 percent in 1981, but dropped to 22 percent in 1983 and 42 percent in 1984.

Japan has also depended on foreign suppliers to meet domestic soybean demand. An insignificant amount of soybeans is produced in Japan. In 1982, only about 4 percent of total demand was met by domestic production, while 83 percent was met by imports. The United States traditionally has been the major supplier of soybeans to Japan. In 1980, 18 percent of all U.S. soybean exports went to Japan.

Demand for soybeans in Japan increased significantly, from 2.0 million metric tons (MMT) in 1965, to 3.3 MMT in 1970, 3.4 MMT in 1975, and 4.4 MMT in 1980. Direct food consumption has been an important use of soybeans in Japan, though food use has fallen in recent years. Human consumption of soybeans accounted for 26 percent of total domestic use in 1965, and 18 percent of total domestic use in 1980. Crushing demand has consistently increased in response to rising demand for protein meal as livestock feed.

Japanese imports of soymeal and soyoil products have been relatively small. Japan has a large and efficient crushing industry. Tariff on soyoil is 20 to 28 yen per kilogram, about \$100.00 per ton, or 14 percent of current price. General tariff on meal is 5 percent, but is temporarily fixed at zero. Other meals enter freely. There are no import restrictions on soybeans.

Livestock Sector

Over the past 20 years, Japan has experienced a rapid expansion of operations in all segments of livestock production. The average number of animals per farm in 1960 was 2 head for dairy, 1.2 for beef, 2.4 for hogs, and 12 for chickens. The average number of animals per farm in 1970 was 5.9 head for dairy, 2 for beef, 14.3 for hogs, 70 for hens, and 3,049 for broilers. In 1984, the average livestock inventory per farm specializing in that animal increased to 24.1 head for dairy, 8.2 for beef, 113.9 for hogs, 952 for hens, and 19,500 for broilers. The increase in the average size of operation was particularly remarkable for poultry and hog enterprises, while expansion in the size of beef operations occurred at a more moderate pace.

Japanese pork production has been growing at an annual rate of 10 percent. Hog enterprises are increasing in size, and are becoming more specialized.

Almost all chicken production in Japan takes place in relatively efficient capital-intensive broiler facilities. Poultry meat production has expanded rapidly, increasing from 204,000 metric tons (MT) in 1960 to 1,145,000 MT in 1980.

Because of the heavy reliance on imported feeds, the cost of producing livestock in Japan is high compared with other countries. The production cost of pork in Japan is about 1.4 times that of pork produced in the United States. The production cost of beef in 1980 was three times the production cost of beef in the United States. Because of the high cost of production, the Japanese livestock industry, especially the beef sector, relies upon trade restrictions, subsidies, and high producer prices for its economic survival.

Meat consumption in Japan has been increasing during the last two decades; however, it is still low compared with per capita meat consumption in other developed countries. The growth of per capita disposable income and increased urbanization are among the important factors responsible for the increase in the demand for livestock products.

The demand for beef has quadrupled over the past two decades, from 103,000 MT in 1960 to 418,000 MT in 1980 (carcass weight). During 1960 to 1965, imports of beef were negligible, accounting for only 4-5 percent of the total supply. Imports have increased quite rapidly over the past 10 years or so. In 1970 Japan imported 23,000 MT of beef. In 1975 beef imports amounted to 45,000 MT and in 1980, 122,000 MT. Imports accounted for one third of the total supply of beef for recent years. The increases in Japanese beef imports can be attributed to the fact that domestic production has not been able to keep up with the rapid increase in demand. ^{5/} About 60-70 percent of Japanese beef production is a byproduct of dairy operations. The rest -- Wagyu beef -- is very expensive and very high quality. Wagyu beef is considered by Japanese to be far superior to any imported beef.

Australia is the main supplier of beef and veal to Japan (it provided about 70 percent of total imports in 1981). Other suppliers of beef are the United States and New Zealand. Less than half of the Australian beef imported by Japan is middle-quality chilled beef; the remainder is made up of lower quality frozen beef. Beef imported from the United States has traditionally been high quality table beef for the hotel and restaurant trade, while beef imported from New Zealand has been lower quality frozen beef. The United States has been taking an increasing share of Japanese beef imports, accounting for 29 percent of total beef imports in 1984, compared with 10.8 percent in 1976. While Australia's share decreased from 83 percent in 1976 to 63 percent in 1984, the absolute amount of Australia's exports to Japan showed a modest increase.

The major exporters of pork to Japan are Canada, the United States, Taiwan, Denmark, Sweden, and South Korea. Pork imports show a high degree of year-to-year variation. The large percentage variation in pork imports, and their low level on average, are due to the residual nature of imports in a market where domestic supply is close to demand.

Due to the high economic viability of the efficient poultry industry, poultry imports have traditionally been a small portion of total domestic consumption.

^{5/} Recent bilateral trade agreements with the United States and Australia also affect beef imports.

Most poultry is imported from the United States, with the People's Republic of China and Thailand contributing a small but growing share of total imports.

Agricultural Trade Policies

Japan's agricultural and trade policies have been characterized as protectionistic (9). Japan controls imports of many commodities by state trading and licensing procedures. All imports into Japan are subject to licensing requirements. Private traders must apply for licenses. Most agricultural commodities, however, are imported by authorized government trading agencies.

Since Japan produces only a small portion of the total feed grain and meal consumed domestically, it has taken a relatively free trade stance towards imports of corn, grain sorghum, and soybeans. On the other hand, the pricing and marketing of food grains such as rice, wheat, and barley are strictly controlled by the Japanese Food Agency which administers internal producer and consumer prices of these commodities. Imports of wheat, barley, and rice are licensed and limited by the Food Agency, and all imports are sold to the government at the port. When rice surpluses develop, as they did in the late sixties and seventies, rice producers are paid to divert paddy land to production of wheat, barley, soybeans, and other crops. Surplus rice is also subsidized for use in mixed feeds, exports, and industrial uses.

The livestock sector has been protected by subsidies and import restrictions. The practical effects of these measures have diminished for Japan's increasingly efficient poultry and pork sectors, but trade restrictions are still quite important to the dairy and beef sectors. Import restrictions on livestock products include both tariffs and quotas. Imports of beef are strictly controlled by a global quota and subject to a 25 percent ad valorem tariff. All beef entering Japan must pass a rigorous customs and quarantine inspection. These sanitary restrictions often make it difficult for exporters to comply, and thus have a tendency to constrain imports. Pork is not subject to import quotas, but is subject to a variable duty or tariff, whichever is larger. This system can be waived in times of high domestic pork prices. Japan is nearly self-sufficient in poultry production, so imports account for only a small portion of total consumption. Tariff on boneless chicken is 18 percent. Tariff on chicken legs will be reduced to 10 percent by 1987.

A MODEL OF JAPAN'S GRAIN, OILSEEDS, AND LIVESTOCK ECONOMY

A system-of-equations model of 19 agricultural commodities was constructed for Japan. The model simulates consumption, production, stock changes, trade, demand prices, and supply prices for Japan's grains, oilseeds, and livestock products. The 19 commodities included in the model are:

<u>Grains</u>	<u>Oilseeds and products</u>	<u>Livestock products</u>
wheat	soybeans	beef and veal
corn	soymeal	pork
other coarse grains	soyoil	poultry
rice	other oilseeds	eggs
	other oilmeal	mutton and lamb
	other oil	milk
		butter
		cheese
		other dairy products

These commodities accounted for nearly 60 percent of Japan's gross farm income in 1981 (table 6). In terms of world agricultural trade, Japan is an important importer of grain, oilseeds, and livestock products. Table 1 shows the relative importance of these commodities in world agricultural trade in 1982. They accounted for 40 percent of the value of Japan's agricultural imports, which in turn accounted for 7 percent of the value of world agricultural trade.

Model Structure

The overall structure of the Japanese GOL model is primarily patterned after a version of a detailed standard GOL country model for the United States (10), modified to conform to Japan's agriculture. The JPGOL model consists of eight major equation groups: (1) supply of crops, (2) supply of livestock products, (3) food and nonfeed demand, (4) derived feed demand for grains and meals, (5) stock demand, (6) trade quantities, (7) marketing margins, and (8) price linkage relations. The linkages among these blocks are illustrated in figure 1. The functional form for most model equations is nonlinear with constant elasticities over all price ranges. A computer-generated listing of the complete Japan GOL model is provided in appendix A.

The crop supply equations are based upon the assumption that producers allocate their resources, such as available cropland and other inputs, to maximize profits. Because of the simultaneous nature of acreage, yield, and production decisions (6), the model specifies a system of behavioral equations for acreage response and yield response, with identity equations defining production as area times yield. In addition to the equations for individual crops, a total cropland supply equation is also specified to increase the consistency between total cropland availability and its allocation to specific crops. The "total GOL crop area" is approximately equal to the sum of the individual GOL crop areas. The total cropland supply is a function of a time trend and the lagged average gross revenue per hectare deflated by an index of the cost of production (equation 1). These equations follow.

Total GOL crop area equation (ARTT):

$$[1] \quad ARTT_t = ARTTI (TTRL_{t-1})^{b_1} (1 + G)^T$$

where t = time period, $t-1$ = lagged 1 year

ARTTI = intercept of ARTT equation

TTRL = average real return to land

b_1 = elasticity of total area with respect to average real return to land

G = an annual growth rate for crop land supply

T = time trend

Definition of average real return to land (TTRL):

$$[2] \quad TTRL = \frac{\sum_1 PS_1 YD_1 AR_1}{ICP \sum_1 AR_1} \cdot 100$$

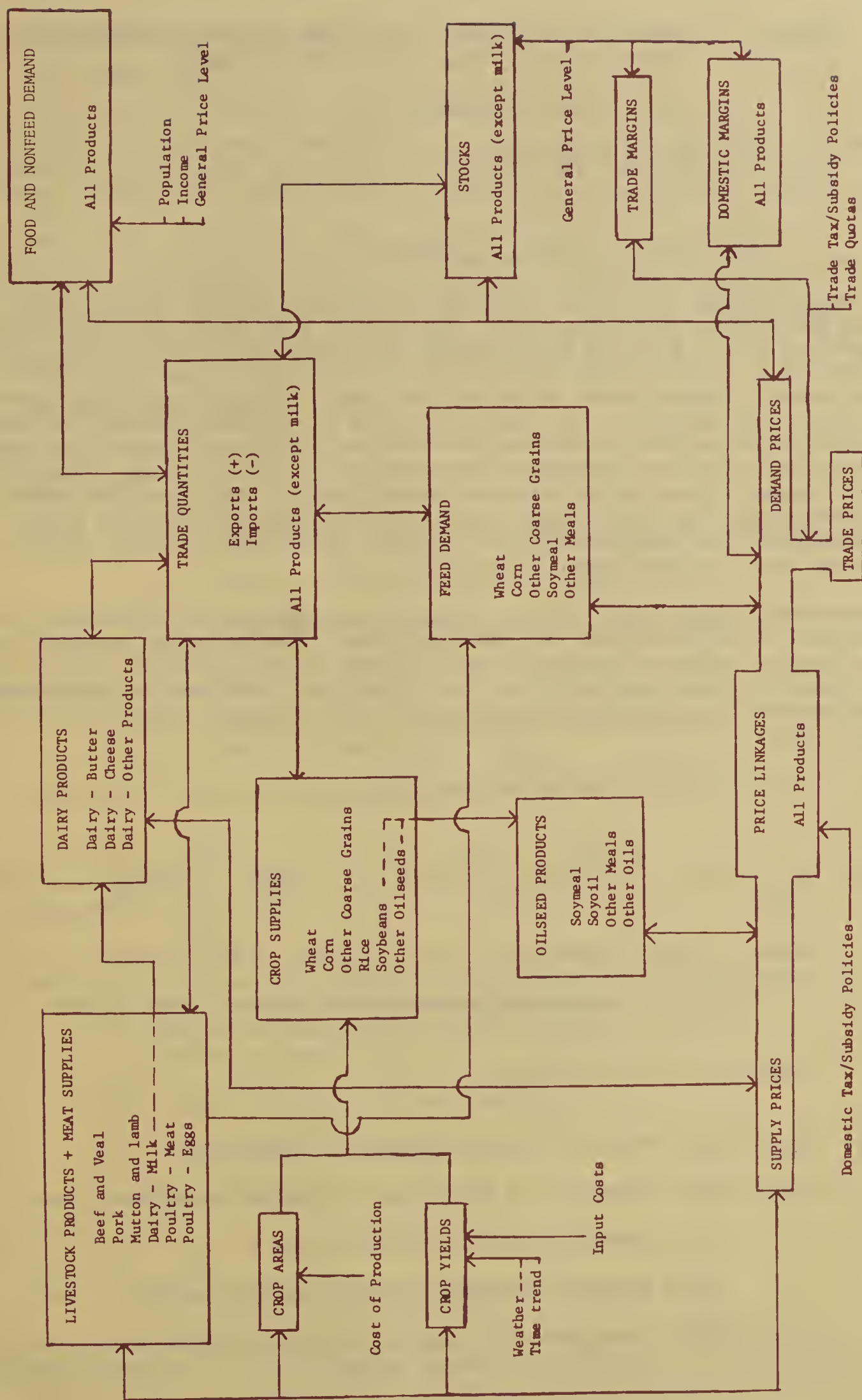
Table 6--Japan's gross agricultural output

Commodity	:	1960	:	1965	:	1970	:	1975	:	1980	:	1981	:	1982
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1/ The exchange rate between U.S. dollar and yen is as follows. \$1.00 = 360, 360, 360, 287, 227, 227, and 249 yen for 1960, 1965, 1970, 1975, 1980, 1981, and 1982, respectively.

Source: The Statistical Yearbook of the Ministry of Agriculture, Forestry, and Fisheries of Japan; various issues.

Figure 1--Gol Standard Country Model



where i = index for individual crops, that is, wheat, corn, other coarse grains, rice, soybeans, and other oilseeds.

PS_i = supply price for crop i

YD_i = yield of crop i

AR_i = area of crop i

ICP = index of cost of production

A share concept is used to calculate individual crop areas (equation 3). That is, the share of each crop within the six-crop total area is a function of the previous year's deflated gross returns per hectare for all six crops in the model (i.e., wheat, corn, other coarse grains, rice, soybeans, and other oilseeds). Lagged prices serve here as proxies for expected prices because current year prices are not fully known when the planting decision is made. Better price information becomes available as the growing season progresses--for major crops, the government announces its official purchase price before the harvest. This can affect input levels (such as fertilizer and labor), and consequently alter crop yields. Thus, yield per hectare for each crop is a function of the current crop price deflated by an index of input costs, a time trend, and a weather index (equation 4).

Theoretical restrictions such as adding-up and homogeneity conditions are imposed on the individual crop area equations. The adding-up condition keeps the sum of individual crop areas nearly equal to total cropland supply. The homogeneity conditions imply that individual area equations are homogeneous of degree zero in all prices; that is, all of the price elasticities must sum to zero (11).

Individual crop area allocation (AR_i):

$$[3] \quad AR_{i,t} = ARI_i \left[\frac{(PS_{i,t-1}) (YD_{i,t-1})}{ICP_{t-1}} \right]^{b_{ii}} \prod_{j \neq i} \left[\frac{(PS_{j,t-1}) (YD_{j,t-1})}{ICP_{t-1}} \right]^{b_{ij}}$$

where ARI_i = intercept of individual crop i area equation

b_{ii}, b_{ij} = elasticity of area share of crop i with respect to lagged real return to crop i or crop j

Individual crop yield (YD_i):

$$[4] \quad YD_i = YDI_i (PS_i/PIN)^{b_1} (AR_i)^{b_2} (1 + G_i)^T (WIN)$$

where YDI_i = intercept of individual crop i yield equation

G_i = annual yield growth rate of crop i

WIN = weather index (for "normal" weather, $WIN=1$)

PIN = price index of crop inputs (such as fertilizer)

Individual crop supply (QS_i):

$$[5] \quad QS_i = (AR_i) (YD_i)$$

where QS_i = production quantity of crop i

The oilseed sector is more complex than the grain sector. Soybeans and other oilseeds are principally processed into meal and oil. The oilseed sector includes equations for oilseed crushing demand and oilseed product supplies.

The quantities of soybeans and other oilseeds demanded for crushing are specified as a function of the ratio of oilseed crushing returns to oilseed prices and a time-trend variable which serves as a proxy for growth in crushing capacity (equation 6). The supplies of oilmeal and oil are then calculated as the products of the quantity of oilseed crushed multiplied by the shares going into meal and oil, respectively (equation 8).

Oilseed crushing demand (QC_i):

$$[6] \quad QC_i = QCI_i (PR_i)^{b_i} (1 + G_i)^T$$

where QCI_i = intercept of oilseed crushing equation for oilseed i

PR_i = ratio of crushing returns to oilseed costs

G_i = growth rate of crushing capacity for oilseed i

i = index for soybeans or other oilseeds

b_i = elasticity of crushing demand with respect to crushing returns/costs ratio

The ratio of crushing returns to costs (PR_i):

$$[7] \quad PR_i = \frac{\sum_j (S_{ij} \cdot PS_j)}{PD_i}$$

where S_{ij} = the share of oilseed i weight going to oilseed product j ;
for example, product extraction rate

j = index for meal or oil

PS_j = supply price of oilseed product j

PD_i = demand price of oilseed i

Quantity supplied of meal or oil (QS_j):

$$[8] \quad QS_j = S_{ij} \cdot QC_i$$

where QS_j = quantity supplied of oilseed product j

For beef cattle, hogs, and mutton and lamb, the supply block consists of the following equations: (1) a livestock inventory identity, (2) a livestock addition-to-inventory equation, (3) a livestock slaughter equation, and (4) a

meat production equation.

The livestock inventory identity specifies the relationship between stocks and flows for each livestock category (equation 9). Equations 11 and 12, which portray additions and subtractions (slaughter) from livestock herds, are very similar. They both depend on the beginning inventory of the particular livestock category and on the current and lagged ratios of the price of the livestock product output relative to the price of feed input. The meat production equations which explain the quantity produced of beef and veal, pork, and mutton and lamb depend on the number of slaughtered animals and on the current and lagged ratios of product prices to feed costs (equation 13). Since most of Japan's beef production comes from dairy breed cattle, the beef cattle inventory includes dairy cattle in the empirical model.

Livestock inventory equation (LN_i):

$$[9] \quad LN_{i,t} = LN_{i,t-1} + LA_{i,t-1} - LS_{i,t-1}$$

where LA = livestock number added to herd inventory (net of death loss)
 LS = livestock number slaughtered
 i = index for livestock category: beef & veal, pork, or mutton & lamb

Definition of weighted feed cost (FC_i):

$$[10] \quad FC_i = \sum_j (R_{ij} \cdot PD_j)$$

where i = index for livestock category
 j = index for feedstuffs
 R_{ij} = share of feedstuff j used to feed livestock i
 PD = feed demand price

Livestock additions to livestock number (LA_i):

$$[11] \quad LA_{i,t} = LAI_i \left[\frac{PS_{i,t}}{FC_{i,t}} \right]^{b_1} \left[\frac{PS_{i,t-1}}{FC_{i,t-1}} \right]^{b_2} (LN_{i,t})$$

where LAI_i = intercept of livestock slaughter equation
 PS_i = supply price of livestock i
 FC_i = weighted feed cost for livestock i
 b_1, b_2 = current and lagged elasticity of livestock additions with respect to price/cost ratio

Livestock slaughter equation (LS_i):

$$[12] \quad LS_{i,t} = LSI_i \left[\frac{PS_{i,t}}{FC_{i,t}} \right]^{b_1} \left[\frac{PS_{i,t-1}}{FC_{i,t-1}} \right]^{b_2} (LN_{i,t})$$

where LSI_i = intercept of livestock slaughter equation
 b_1, b_2 = current and lagged elasticity of livestock slaughter with respect to price/cost ratio

Meat supply equation (QS_i):

$$[13] \quad QS_{i,t} = QSI_i \left[\frac{PS_{i,t}}{FC_{i,t}} \right]^{b_1} \left[\frac{PS_{i,t-1}}{FC_{i,t-1}} \right]^{b_2} (1 + G_i)^T (LS_{i,t})$$

where QSI_i = intercept of meat supply equation

G_i = annual growth rate of slaughter weight per animal

b_1, b_2 = current and lagged elasticity of meat supply with respect to price/cost ratio

Because of the fast turnover in poultry production, a single poultry meat supply equation is specified. Poultry meat supply is a function of the current and lagged ratios of the poultry supply price to feed costs, and a time trend (equation 14).

Poultry meat supply equation (QSPM):

$$[14] \quad QSPM = QSPMI \left[\frac{PSPM_t}{FCPM_t} \right]^{b_1} \left[\frac{PSPM_{t-1}}{FCPM_{t-1}} \right]^{b_2} (1 + G_i)^T$$

where $QSPMI$ = intercept of poultry meat supply equation

$PSPM$ = poultry meat supply price

$FCPM$ = feed cost for poultry

G = annual growth rate of poultry meat supply

b_1, b_2 = current and lagged elasticity of poultry meat supply with respect to price/cost ratio

The behavioral relationships for egg supply and milk supply are similar. Layer and dairy cow numbers are a function of the ratios of current and lagged supply prices to feed costs, and lagged layer and dairy cow numbers (equation 15). The production of eggs or milk is a function of animal numbers and the current and lagged ratios of supply prices to feed costs (equation 16).

Livestock numbers equation (LN_i):

$$[15] \quad LN_{i,t} = LNI_i \left[\frac{PS_{i,t}}{FC_{i,t}} \right]^{b_1} \left[\frac{PS_{i,t-1}}{FC_{i,t-1}} \right]^{b_2} (LN_{i,t-1})^{b_3}$$

where LNI_i = intercept of livestock numbers equation, i = dairy cattle or hen layers

PS_i = supply price of eggs or milk

FC_i = weighted feed cost for hen layers or milk

b_1, b_2 = current and lagged elasticity of livestock numbers
with respect to supply price/feed cost ratio
 b_3 = elasticity of livestock numbers with respect to
lagged livestock numbers

Supply equation (QS_i):

$$[16] \quad QS_{i,t} = QSI_i \left[\frac{PS_{i,t}}{FC_{i,t}} \right]^{b_1} \left[\frac{PS_{i,t-1}}{FC_{i,t-1}} \right]^{b_2} (1 + G_i)^T (LN_{i,t})$$

where QSI_i = intercept of supply equation, i = milk or eggs
 b_1, b_2 = current and lagged elasticity of egg or milk supply
with respect to supply price/feed cost ratio

Butter, cheese, and other dairy product supplies are specified as functions of the prices of these products relative to the price of milk (equation 18), and the quantity of milk available for manufacturing which is the total supply of milk minus fluid milk consumption (equation 17).

Manufacturing milk (QMDM):

$$[17] \quad QMDM = QSDM - QDDM$$

where $QSDM$ = quantity of milk supplied (equals QS_i for i = milk in equation 16)
 $QDDM$ = quantity of fluid milk demanded

Quantity supplied of dairy product (QS_i):

$$[18] \quad QS_i = QSI_i \left[\frac{PS_i}{PSDM} \right]^{b_{ii}} \prod_{j \neq i} \left[\frac{PS_j}{PSDM} \right]^{b_{ij}} \quad (QMDM)$$

where i, j = index for type of dairy product: butter, cheese, or other dairy products
 QSI_i = intercept of dairy product i supply equation
 PS_i = supply price of dairy product i
 b_{ii} = elasticity of dairy product supply with respect to the ratio of its own price to the milk supply price
 b_{ij} = elasticity of dairy product supply with respect to the ratio of the cross product price j to the milk supply price

The consumer demand block comprises the demand equations for grains, oilseeds, and livestock products. These equations are based upon the neoclassical theory of utility maximization. Per capita quantity demanded for food and other nonfeed use of each product is a function of own- and cross-prices and per capita disposable income, deflated by the price index for nonagricultural products (equation 19). Theoretical restrictions on parameters of the demand equations, such as homogeneity of degree zero in income and price, are imposed (4).

Fish is an important source of protein in the Japanese diet. Despite the recent rapid growth in meat consumption, the Japanese eat more fish than they

eat all meat combined (1). Therefore, the importance of fish in the Japanese diet should not be overlooked. The price of fish has an important substitution effect on consumer demand for livestock products. In specifying the demand for beef, pork, poultry meat, eggs, and rice, a fish price index was included among the explanatory variables.

Food demand equation (QD_i):

$$[19] \quad QD_i = QDI_i \left[\frac{PD_i}{PNG} \right]^{b_{ii}} \prod_{j \neq i} \left[\frac{PD_j}{PNG} \right]^{b_{ij}} \left[\frac{INC/POP}{PNG} \right]^{b_{inc}} (PIF)^{b_f} (POP)$$

where QDI_i = intercept of food demand equation i
 i, j = index for GOL commodity
 PD_i = demand price of commodity i
 PNG = index of nonagricultural prices
 INC = national income
 POP = population
 PIF = price index for fish
 b_{ij} = elasticity of demand with respect to j th product demand price deflated by index of non-GOL prices, with $i=j$ for an own-price elasticity, $i \neq j$ for a cross-price elasticity
 b_{inc} = income elasticity of demand
 b_f = elasticity of demand with respect to price of fish (for beef, pork, poultry meat, eggs, and rice demand equations)

The derived feed demand component comprises the feed demand equations for corn, other coarse grains, wheat, soymeal, and other oilmeals. The quantity demanded of each feed ingredient depends on the prices of all the feedstuffs relative to the price index of livestock products, and on the number of units of grain consuming animals (equation 20). The general structure of the feed demand equations is consistent with the theoretical framework of derived input demand functions (12). The feed demand relations have been tied to the livestock sectors through the price index of livestock products (equation 22) and an aggregate measure of livestock units (equation 21). The homogeneity condition for prices is imposed on the feed demand equations.

Feed demand equation (QF_i):

$$[20] \quad QF_i = QFI_i \left[\frac{PD_i}{LPI} \right]^{b_{ii}} \prod_{j \neq i} \left[\frac{PD_j}{LPI} \right]^{b_{ij}} (GCAU)$$

where QFI_i = intercept of feed demand equation i
 i, j = index for corn, other coarse grains, wheat, soymeal, and other oilmeals
 PD_j = demand price for feed j
 LPI = livestock price index
 $GCAU$ = grain consuming feed animal units
 b_{ij} = feed demand elasticity with respect to feed price/livestock price ratio, with $i=j$ for an own price elasticity, $i \neq j$ for a cross-price elasticity

Definition of grain consuming animal units (GCAU):

$$[21] \quad \text{GCAU} = W_{\text{PM}}(\text{QSPM}) + \sum_i W_i (\text{LN}_i)$$

where W_i = weights for livestock numbers

LN_i = livestock numbers of livestock i

i = index for livestock category

W_{pm} = weights for poultry meat

QSPM = quantity supplied of poultry meat

Definition of livestock price index for feed demand (LPI):

$$[22] \quad \text{LPI} = \sum LW_i (\text{PS}_i)$$

where i = index for livestock category

LW_i = weights for livestock category i

PS_i = livestock supply price

Equations for stock changes provide the link between consumption and domestic production levels. The quantity of ending stocks relative to the quantities demanded and supplied is a function of the product demand price deflated by the non-GOL product price index (equation 23). Only fluid milk is assumed to have no year-to-year carry-over stock.

Stock equation (SK_i):

$$[23] \quad \text{SK}_i = \text{SKI}_i (\text{PD}_i / \text{PNG})^{b_1} (\text{QD}_i + \text{QF}_i + \text{QC}_i + \text{QS}_i)$$

where SKI_i = intercept of stock equation i

i = index for each GOL commodity except fluid milk

SK_i = ending stocks of commodity i

b_1 = elasticity of stock demand with respect to demand price deflated by index of non-GOL product price

To close the system, the domestic market clearing identity (quantity equilibrium condition) for each commodity is defined. The equilibrium condition is that the net trade quantity (export or import) be equal to the supply quantity minus the sum of demand quantities for human consumption, feed use, and net additions to stocks change. For each of the GOL commodities, trade quantities are calculated as the difference between the domestic supply and demand (equation 24).

Net trade quantities (QT_i):

$$[24] \quad \text{QT}_{i,t} = \text{QS}_{i,t} - \text{QD}_{i,t} - \text{QF}_{i,t} - \text{QC}_{i,t} - [\text{SK}_{i,t} - \text{SK}_{i,t-1}]$$

Variables called "total supply" and "total demand" are used in the price-estimating part of the model. In equations 25 and 26, total supply is set equal to domestic production, and total demand is set equal to the sum of the demands for food, feed, crushing, and net additions to stocks (as relevant for each commodity).

Total supply and demand (TS_i and TD_i):

$$[25] \quad TS_i = QS_i$$

$$[26] \quad TD_{i,t} = QD_{i,t} + QF_{i,t} + QC_{i,t} + (SK_{i,t} - SK_{i,t-1})$$

where i = index for each GOL commodity except milk

TS_i = total supply for commodity i

TD_i = total demand for commodity i

The JPGOL model maintains four levels of prices: world trade prices, Japanese trade prices, Japanese demand prices, and Japanese supply prices. These prices are linked by domestic and trade margins, and by applicable taxes, subsidies ^{6/}, and tariffs. For fluid milk, which is assumed not to be traded, only domestic demand and supply prices are calculated.

When JPGOL is run in a stand alone mode -- the context for this report -- world prices are generally measured as import unit values, so that Japanese trade prices are the same as world trade prices (equation 27). When the JPGOL model is run as a part of the world GOL model, world prices usually are measured f.o.b. at a major export point, and always are denominated in dollars. Under those circumstances, Japanese trade prices are set equal to world trade prices times the yen/dollar exchange rate, plus an allowance for transport costs.

Trade prices (PT_i):

$$[27] \quad JPPT_i = WDPT_i$$

where i = index for each GOL commodity except milk

$JPPT_i$ = Japanese trade price for commodity i , in yen/ton

$WDPT_i$ = world trade price for commodity i , in yen/ton

In the domestic market, demand and supply prices are linked by any applicable taxes and subsidies on production and consumption, and by the domestic margin, which represents the transport and marketing costs associated with selling a Japanese farm product in Japan (equation 28). In a situation in which the amount of trade is not restricted by a quota, the link between trade and demand prices depends on whether the product is imported or exported. For imports (equation 29a), the demand price equals the trade price, plus any applicable import tariff and consumption tax, plus a trade margin which represents the transport and marketing costs associated with traded goods.

^{6/} A net subsidy is represented as a negative tax in the price linkage relationships.

For exports (equation 29b), the demand price is set so that local producers receive the same revenue (net of taxes and marketing margins) from sales to domestic consumers as they receive from sales to foreign purchasers. Under extreme circumstances, high margins and high taxes may combine to imply negative prices. The absolute value function is used in equations 28 and 29 to keep prices positive in such cases, and to prevent the model from "blowing up" when it calculates equations in which prices are raised to a power.

Supply-demand price linkages:

$$[28] \quad PS_i = \text{ABSV}(PD_i - TC_i - MD_i - TP_i)$$

where i = index for GOL commodity
 ABSV = absolute value
 PS = supply price
 PD = demand price
 TC = domestic consumption tax/subsidy
 MD = domestic marketing margin
 TP = domestic production tax/subsidy

Demand-trade price linkages:

$$[29] \quad (a) \quad \text{if } QT_i < 0, \text{ then } PD_i = \text{ABSV}(PT_i + MT_i + TM_i + TC_i)$$

$$(b) \quad \text{if } QT_i > 0, \text{ then } PD_i = \text{ABSV}(PT_i - MT_i - TE_i + MD_i + TC_i)$$

where i = index for all GOL commodities except milk
 PT = trade price
 TM = import tax/subsidy
 TE = export tax/subsidy
 MT = trade margins

The domestic and trade margins are set either to a constant value (measured in constant yen per kilogram) or set to a constant share measured as a fraction of the demand price. The domestic margin for seven livestock products is modeled as a constant share; for all other commodities, the domestic margin is modeled as a constant value. For five commodities--corn, rice, other oilseeds, other oils, and mutton--the trade margin is modeled as a constant. For the other 13 commodities, the trade margin is modeled as a constant share. For consistency with other GOL models, the margin equations shown in appendix A are specified as a function of the current and lagged ratios of the non-GOL product price index to the demand price (equations 30 and 31). But the current and lagged margin elasticities are always set to zero in this model, so these equations specify constant shares in practice.

Domestic marketing margins (MD_i):

$$[30] \quad MD_{i,t} = MDI_i \left[\frac{PNG_t}{PD_{i,t}} \right]^{b_1} \left[\frac{PNG_{t-1}}{PD_{i,t-1}} \right]^{b_2} (PD_{i,t})$$

where i = index for beef and veal, pork, poultry meat, eggs, milk, butter, and other dairy products
 MDI_i = intercept of domestic margin equation for commodity i
 b_1, b_2 = the current and lagged domestic margin share of demand price elasticities (in this model, always set equal to zero)

Trade margins (MT_i):

$$[31] \quad MT_{i,t} = MTI_i \frac{PNG_t^{-b_1}}{PD_{i,t}} \frac{PNG_{t-1}^{-b_2}}{PD_{i,t-1}} (PD_{i,t})$$

where i = index for beef and veal, pork, poultry meat, eggs, wheat, other coarse grains, soybeans, soymeal, soyoil, other meal, butter, cheese, and other dairy products
 MTI_i = intercept of domestic margin equation for commodity i
 b_1, b_2 = the current and lagged trade margin share of product price elasticities (in this model, always set equal to zero)

The price linkage equations introduce specific places for price oriented policy variables to enter the model in a general way. Generally, production and export taxes are exogenous variables in the model, assumed as "given." The exceptions are for grains. Subsidies (negative taxes) to wheat, coarse grain, and rice production and subsidies to rice exports are a function of their own lagged values, lagged rice stocks, and an exponential time trend (equations 32 to 36).

Production subsidy equations (SP_i):

$$[32] \quad SP_{i,t} = SPI_i (SKRI_{t-1})^{b_1} (SPRI_{t-1})^{b_2} (SP_{i,t-1})^{b_3} (T)^{b_4}$$

$$[33] \quad TP_i = - SP_i$$

where i = index for wheat or other coarse grains
 SPI = intercept of production subsidy equation
 SP = production subsidy
 $SKRI_{t-1}$ = beginning stock of rice
 $SPRI_{t-1}$ = production subsidy of rice, lagged 1 year
 b 's = elasticity coefficients

$$[34] \quad SPRI_t = SPRII (SKRI_{t-1})^{b_1} (SPRI_{t-1})^{b_2} (T)^{b_3}$$

where $SPRI$ = production subsidy of rice
 $SPRII$ = intercept of rice production subsidy equation
 b 's = elasticity coefficients

Rice export subsidy equation ($SERI$):

$$[35] \quad SERI_t = SERII (SKRI_{t-1})^{b_1} (SERI_{t-1})^{b_2} (T)^{b_3}$$

$$[36] \quad TERI = - SERI$$

where $SERI$ = export subsidy of rice
 $SERII$ = intercept of export subsidy equation for rice
 b 's = elasticity coefficients

The demand price for fluid milk is modeled as a constant fraction of the gross revenue received from all manufactured dairy products, per ton of milk used in their production (equation 37). Then the supply price is calculated as the demand price minus the domestic margin and taxes on production and consumption (equation 38).

Milk price equations (PDDM and PSDM):

$$[37] \quad PDDM = (PDDMI) \left[\frac{\sum_j (QS_j \cdot PS_j)}{QMDM} \right]$$

$$[38] \quad PSDM = PDDM - TPDM - MDDM - TCDM$$

where $PDDM$ = demand price for fluid milk
 $PDDMI$ = intercept of milk demand price equation
 $PSDM$ = supply price for fluid milk

The model allows trade to depend on a direct link between domestic prices and world market prices. However, the model also allows trade to be bound by an export quota and/or an import quota. In cases where there is no trade or where trade is restricted by quotas, the linkage between the domestic price and the world market price is severed.

Quota restrictions are introduced by means of "if-then" statements, and an iterative solution technique (Gauss-Seidel) is used to solve the model. These "if-then" switching statements in effect disconnect domestic prices from trade prices when a quota is binding. Additional equations to estimate the domestic market clearing prices are specified so that the model iterates to a set of prices that clear the domestic markets even when the quantity of trade is fixed.

To understand how the model handles situations in which there are quantitative limits on trade, one must be aware of its general structure. When the model simulates results for a particular year, all the endogenous variables are initialized to their levels in the previous year. Then the model iterates between two phases: In equations 1 to 26, the values of quantity variables are recalculated, based on the current iteration's estimates for prices. Then in equations 27 to 42, the values of price variables are recalculated, based on the newly re-estimated values for the quantity variables. Next the newly recalculated prices are fed back into equations 1 to 26, and so on. The iterations stop when each variable has a value no more than 1 percent different from its level in the previous iteration.

There are three situations in which trade is restricted by quantitative limits:

- (1) The estimated demand price implies a level of exports which exceeds an export quota. Here trade is restricted by the export quota.
- (2) The estimated demand price implies a level of imports which exceeds an import quota. Here trade is restricted by the import quota.
- (3) The domestic demand price is low enough, and import tariffs and trade margins are high enough, so that it is cheaper for Japanese consumers to buy a locally produced good than to import it. At the same time,

domestic supply prices, taxes, export taxes, and trade margins are high enough in combination so that the Japanese product is not profitable to sell abroad. This can be called a "zero trade situation." Such situations normally apply only to products that are very expensive to transport, relative to their cost of production. Fresh milk is an example.

The quantities of trade implied by the levels of prices in the current iteration of the model are calculated in equation 24 above. Since trade is measured as net exports, imports are recorded as negative amounts of trade.

In equation 39, if the level of trade implied by prices in the current iteration exceeds the export quota, then a "price adjustment factor" is calculated in proportion to the excess of trade over the quota, divided by the sum of domestic supply and demand. If the implied level of trade is so negative that it would violate an import quota, the price adjustment factor is calculated in proportion to the excess of imports over the quota, divided by the sum of domestic supply and demand. Otherwise, for use in a potential zero trade situation, the price adjustment factor is calculated in proportion to the implied quantity of trade, divided by the sum of domestic supply and demand. In equation 40, a new "estimated price" usually is calculated as the demand price in the current iteration, multiplied by one minus the price adjustment factor. However, to avoid the possibility of wild price gyrations during the iterative calculations, a "convergence limit" replaces the price adjustment factor whenever this convergence limit has the smaller absolute value. In equation 41, a "price constraint" variable is set equal to one if (1) an export quota is binding, or (2) an import quota is binding, or (3) a zero-trade situation exists; otherwise (4) the price constraint variable equals zero. In equation 42a, if the price constraint variable equals one, then the demand price to be used in the next iteration is set equal to the estimated price obtained from equation 40. If the price constraint variable equals zero, then the demand price to be used in the next iteration is calculated in equations 42b and 42c, which are exactly the same as the unrestricted trade equations 29a and 29b described previously. Finally, equations 39 through 42 apply to every GOL commodity except milk.

Price adjustment factor (PRAJ):

$$[39] \quad (a) \quad \text{if } QT \geq EQ, \quad \text{then } PRAJ = CP \left[\frac{QT - EQ}{TS + TD} \right]$$

$$(b) \quad \text{if } QT \leq -MQ, \quad \text{then } PRAJ = CP \left[\frac{QT + MQ}{TS + TD} \right]$$

$$(c) \quad \text{otherwise, } PRAJ = CP \left[\frac{QT}{TS + TD} \right]$$

where EQ = export quota

MQ = import quota

QT = net trade quantity, positive values indicate net exports and negative values indicate net imports

$PRAJ$ = price adjustment factor

CP = convergence parameter

TS = total supply, is the same as quantity supplied

TD = total demand, is defined as the sum of food demand, feed demand, changes in stock and crushing demand

The value of the convergence parameter (CP) is set equal to 0.5 for all commodities. Thus, the value of the price adjustment factor (PRAJ) is positive for exported goods and negative for imported goods.

Price estimate (PE):

[40] (a) if $PRAJ > CL$, then $PE = PD (1 - CL)$

(b) if $PRAJ < -CL$, then $PE = PD (1 + CL)$

(c) otherwise, $PE = PD (1 - PRAJ)$

where CL = a convergence limit parameter in the model
 PD = price in the last iteration

The value of the convergence limit (CL) is set equal to 0.1 for all commodities. The value PE is less than PD for exported goods and greater than PD for imported goods.

Price constraint parameter (PC):

[41] (a) if $QT \geq EQ$, then $PC = 1$

(b) if $QT \leq -MQ$, then $PC = 1$

(c) if both $PE < (PT + MT + TM + TC)$ and $PE > (PT - MT + MD - TE + TC)$,
then $PC = 1$

(d) otherwise, $PC = 0$

where PC = price constraint parameter

Domestic demand price (PD):

[42] (a) if $PC = 1$, then $PD = ABSV(PE)$, where $ABSV$ = absolute value

(b) if $PC = 0$, and if $QT < 0$, then $PD = ABSV(PT + MT + TM + TC)$

(c) otherwise, $PD = ABSV(PT - MT - TE + MD + TC)$

Model Coefficients and Parameters

The world agricultural commodity database compiled by the U.S. Department of Agriculture's Foreign Agricultural Service (FAS) was the primary source of data on supply, utilization, crop areas, crop yields, and livestock numbers in the JPGOL model. Data on income, population, domestic production subsidies, prices (such as producer and consumer prices, whether at the retail or wholesale level), and so on were obtained from statistical yearbooks and bulletins published by Japan's Ministry of Agriculture, Forestry, and Fisheries. Time series data from 1960 to 1980 were collected to estimate the model coefficients. Because insufficient data were available to estimate a complete demand elasticity matrix, demand coefficients were obtained mainly from existing studies and analysis.

Table 7 shows the estimated crop area elasticities for wheat, corn, other coarse grains, rice, soybeans, and other oilseeds. The estimated elasticity of total GOL crop area with respect to the real return to land is 0.43, while the annual growth rate for total GOL crop area is estimated as 0.015. Yield elasticity estimates for these crops are reported in table 8.

Table 7--Crop area elasticities, Japan 1/

	INTERCEPTS FOR CROP AREA EQUATIONS (I)	WHEAT (WH)	CORN (CN)	OTHER COARSE GRAINS (CG)
TOTAL GOL CROP AREA (TT) -	1551.21	NA	NA	NA
7 WHEAT (WH) -----	0.069	0.15	0.	-0.05
8 CORN (CN) -----	0.000822	0.	0.32	-0.08
9 OTHER COARSE GRAINS (CG)	0.0443	-0.08	0.	0.14
10 RICE (RI) -----	0.7242	0.	0.	0.
11 SOYBEANS (SB) -----	0.05	0.	0.	-0.07
12 OTHER OILSEEDS (OS) ---	0.00713	0.	-0.01	-0.07

	RICE (RI)	SOYBEANS (SB)	OTHER OILSEEDS (OS)	COST OF PRODUCTION 2/
TOTAL GOL CROP AREA (TT) -	NA	NA	NA	NA
7 WHEAT (WH) -----	-0.03	0.	0.	-0.07
8 CORN (CN) -----	-0.02	-0.07	-0.09	-0.06
9 OTHER COARSE GRAINS (CG)	-0.01	-0.07	-0.01	0.03
10 RICE (RI) -----	0.06	0.	0.	-0.06
11 SOYBEANS (SB) -----	0.	0.07	-0.01	0.01
12 OTHER OILSEEDS (OS) ---	0.	-0.08	0.08	0.08

	REAL RETURN TO LAND (RL)	GROWTH RATE
TOTAL GOL CROP AREA (TT) -	0.0434	0.015
7 WHEAT (WH) -----	NA	NA
8 CORN (CN) -----	NA	NA
9 OTHER COARSE GRAINS (CG)	NA	NA
10 RICE (RI) -----	NA	NA
11 SOYBEANS (SB) -----	NA	NA
12 OTHER OILSEEDS (OS) ---	NA	NA

1/ ELASTICITIES ARE FOR AREA WITH RESPECT TO TOTAL REAL RETURN PER HECTARE.

2/ ELASTICITY WITH RESPECT TO COST OF PRODUCTION IS IMPLIED BY THE ELASTICITIES AND FUNCTIONAL FORM OF THE CROP AREA EQUATION.

NA = Not applicable.

Table 8--Crop yield elasticities, Japan

	INTERCEPTS FOR CROP YIELD EQUATIONS (I)	OWN PRICE	TOTAL AREA (AR)	GROWTH RATE
7 WHEAT (WH) -----	2.25228	0.44731	0.	0.009
8 CORN (CN) -----	3.11626	0.17911	-0.04	0.005
9 OTHER COARSE GRAINS (CG)	2.69413	0.3241	0.	0.005
10 RICE (RI) -----	3.50041	0.022	0.	0.006
11 SOYBEANS (SB) -----	1.1343	0.2	-0.01	0.008
12 OTHER OILSEEDS (OS) ---	3.82318	0.6	0.	0.007

Table 9 presents the supply elasticities for livestock and livestock products. The dairy product supply elasticity matrix is shown in table 10. These dairy products are butter, cheese, and other dairy products. The supply of these dairy products is dependent upon the quantity of manufacturing milk. Also, butter and other dairy products (mainly powdered milk) are joint products. The sign conditions of price elasticities reflect such a relationship.

Table 11 presents the demand elasticity matrix used for the model. Generally, the own-price elasticities of demand for meat are more elastic than those for cereals. Similarly, income elasticities for meat are higher than for cereals.

The feed demand elasticity matrix is shown in table 12. These elasticities were empirically estimated. A weighted livestock price index was used in feed demand equations. The weights used for calculating an aggregate livestock price index were derived from farm income cash receipts from marketings of crop and livestock products (see appendix B, table 1). Also, for grain consuming animal units, an aggregate measure of livestock numbers is used in feed demand relations (appendix B, table 2). These weights are primarily obtained from total feed use by different livestock categories. In livestock supply relations, a weighted feed cost for each livestock category was used as an explanatory variable. Feed cost weights for each livestock category are basically the weights of feed rations for different kinds of livestock. The model specification used assumes a fixed feed ration for each class of livestock.

Table 13 presents oilseed crushing demand elasticities for soybeans and other oilseeds, as well as the time-trend variable used as a proxy for growth in crushing capacity. Table 14 presents price elasticities of demand for stocks. Table 15 shows values of constant share of the domestic and trade margins to demand prices. Table 16 presents production and/or export subsidy elasticities for wheat, other coarse grains, and rice.

Policy Analysis Capabilities

The previous sections discuss the overall structure of the Japanese grains, oilseeds, and livestock model. The model simulates equilibrium prices, supply, utilization, and trade quantities for each of 19 commodities under alternative assumptions.

The model explicitly takes into account cross-price effects among commodities on both the demand and supply sides. More importantly, the model is designed as a tool to analyze alternative trade policies such as tariff and nontariff trade restrictions. Exogenous variables which drive the model consist of one set of nonpolicy-related variables and two sets of policy-related variables. The nonpolicy exogenous variables are the world prices for 18 traded commodities (denominated in yen) and macroeconomic variables: population and income, four Japanese price indices, a weather index, and a time trend. The first set of policy-related exogenous variables are taxes and subsidies on domestic consumption and production, import tariffs, and export taxes or subsidies. All of these taxes and subsidies directly affect the linkage between domestic prices and the world price of each commodity considered. The second set of policy-related variables consists of import and export quotas.

Table 9--Livestock and livestock product elasticities, Japan

	INTERCEPTS FOR LIVESTOCK EQUATIONS (I)	CURRENT PRICE ELASTICITY (PC)	LAGGED PRICE ELASTICITY (PL)	GROWTH RATE
BEEF+VEAL ADDITIONS (LABF) -	0.281024	0.01	0.04	NA
BEEF+VEAL SLAUGHTER (LSBF) -	0.225906	0.01	0.07	NA
BEEF+VEAL SUPPLY (QSBF) ----	0.137444	0.17	0.01	0.001
PORK ADDITIONS (LAPK) -----	1.74673	0.0224	0.02	NA
PORK SLAUGHTER (LSPK) -----	2.01497	-0.114	0.1	NA
PORK SUPPLY (QSPK) -----	0.050268	0.089	0.037	0.001
MUTTON+LAMB ADDITIONS (LAML)	0.095123	0.115	-0.311	NA
MUTTON+LAMB SLAUGHTER (LSML)	1.90298	0.078	-1.089	NA
MUTTON+LAMB SUPPLY (QSMML) --	7.731721E-05	0.091	0.812	0.0084
DAIRY-MILK NUMBERS (LNDM) --	9.5964	0.14	0.12	NA
DAIRY-MILK SUPPLY (QSDM) ---	3.35189	0.0468	0.05	0.025
POULTRY-MEAT SUPPLY (QSPM) -	495.409	0.012	-0.08	0.04
POULTRY-EGGS NUMBERS (LNPE)	143110.	0.01	0.01	NA
POULTRY-EGGS SUPPLY (QSPE) -	0.008149	0.017	0.02	0.02

	LAGGED DEPENDENT VARIABLE (LG)
BEEF+VEAL ADDITIONS (LABF) -	NA
BEEF+VEAL SLAUGHTER (LSBF) -	NA
BEEF+VEAL SUPPLY (QSBF) ----	NA
PORK ADDITIONS (LAPK) -----	NA
PORK SLAUGHTER (LSPK) -----	NA
PORK SUPPLY (QSPK) -----	NA
MUTTON+LAMB ADDITIONS (LAML)	NA
MUTTON+LAMB SLAUGHTER (LSML)	NA
MUTTON+LAMB SUPPLY (QSMML) --	NA
DAIRY-MILK NUMBERS (LNDM) --	0.6293
DAIRY-MILK SUPPLY (QSDM) ---	NA
POULTRY-MEAT SUPPLY (QSPM) -	NA
POULTRY-EGGS NUMBERS (LNPE)	0.
POULTRY-EGGS SUPPLY (QSPE) -	NA

NA = Not applicable.

Table 10--Dairy product supply elasticities, Japan

	INTERCEPTS FOR DAIRY PRODUCT EQUATIONS (I)	DAIRY-BUTTER (DB)	DAIRY-CHEESE (DC)
17 DAIRY-BUTTER (DB) -----	0.025533	0.03	-0.01
18 DAIRY-CHEESE (DC) -----	0.002364	-0.01	0.35
19 DAIRY-OTHER PRODUCTS (DO)	0.052862	0.01	-0.01

	DAIRY-OTHER PRODUCTS (DO)	DAIRY-MILK (DM)
17 DAIRY-BUTTER (DB) -----	0.01	-0.03
18 DAIRY-CHEESE (DC) -----	-0.23	-0.11
19 DAIRY-OTHER PRODUCTS (DO)	0.02	-0.02

1/ ELASTICITY WITH RESPECT TO THE MILK PRICE IS IMPLIED BY THE ELASTICITIES AND FUNCTIONAL FORM OF THE DAIRY PRODUCT SUPPLY EQUATION.

Table 11--Demand elasticities, Japan

	INTERCEPTS FOR DEMAND EQUATIONS (I)	BEEF+VEAL (BF)	PORK (PK)	MUTTON+LAMB (ML)
1 BEEF+VEAL (BF) -----	5.64378	-0.77	0.15	0.
2 PORK (PK) -----	0.375985	0.3	-0.45	0.
3 MUTTON+LAMB (ML) -----	0.135453	0.02	0.	-0.59
4 DAIRY-MILK (DM) -----	0.437682	-0.03	-0.03	0.
5 POULTRY-MEAT (PM) -----	0.062955	0.07	0.22	0.
6 POULTRY-EGGS (PE) -----	0.012237	0.008	0.02	0.
7 WHEAT (WH) -----	0.140201	0.04	0.02	0.
8 CORN (CN) -----	0.012921	0.05	0.03	0.
9 OTHER COARSE GRAINS (CG) -	0.004558	0.05	0.03	0.
10 RICE (RI) -----	0.081549	0.0001	0.0001	0.
11 SOYBEANS (SB) -----	0.008234	0.05	0.03	0.
12 OTHER OILSEEDS (OS) -----	0.001499	0.05	0.03	0.
13 SOYMEAL (SM) -----	0.024389	0.02	0.01	0.
14 SOYOIL (SO) -----	0.15734	0.01	-0.01	0.
15 OTHER MEALS (OM) -----	0.002158	0.05	0.03	0.
16 OTHER OILS (OO) -----	0.085041	0.01	-0.01	0.
17 DAIRY-BUTTER (DB) -----	0.032263	0.02	0.09	0.
18 DAIRY-CHEESE (DC) -----	0.379671	0.21	-0.01	0.
19 DAIRY-OTHER PRODUCTS (DO)	0.011779	0.04	0.02	0.

	DAIRY-MILK (DM)	POULTRY-MEAT (PM)	POULTRY-EGGS (PE)	WHEAT (WH)
1 BEEF+VEAL (BF) -----	0.	0.3	0.	0.
2 PORK (PK) -----	0.	0.12	0.	0.
3 MUTTON+LAMB (ML) -----	0.	0.	0.	0.
4 DAIRY-MILK (DM) -----	-0.07	0.	0.	0.
5 POULTRY-MEAT (PM) -----	0.02	-0.45	0.	0.
6 POULTRY-EGGS (PE) -----	0.02	0.01	-0.03	0.03
7 WHEAT (WH) -----	0.02	0.01	0.06	-0.1
8 CORN (CN) -----	0.03	0.01	0.01	0.
9 OTHER COARSE GRAINS (CG) -	0.03	0.01	0.03	0.01
10 RICE (RI) -----	0.03	0.0001	0.0001	0.001
11 SOYBEANS (SB) -----	0.03	0.01	0.	0.
12 OTHER OILSEEDS (OS) -----	0.03	0.01	0.	0.
13 SOYMEAL (SM) -----	0.01	-0.01	-0.01	-0.01
14 SOYOIL (SO) -----	0.01	-0.01	-0.01	-0.01
15 OTHER MEALS (OM) -----	0.03	0.01	-0.02	-0.01
16 OTHER OILS (OO) -----	0.01	-0.01	-0.01	-0.01
17 DAIRY-BUTTER (DB) -----	0.01	0.06	-0.01	0.01
18 DAIRY-CHEESE (DC) -----	0.01	-0.01	-0.01	-0.01
19 DAIRY-OTHER PRODUCTS (DO)	0.02	-0.01	-0.02	-0.01

Continued —

Table 11 (Cont.)--Demand elasticities, Japan

	CORN (CN)	OTHER COARSE GRAINS (CG)	RICE (RI)	SOYBEANS (SB)
1 BEEF+VEAL (BF) -----	0.	0.	-0.1	0.
2 PORK (PK) -----	0.	0.	0.08	0.
3 MUTTON+LAMB (ML) -----	0.	0.	0.	0.
4 DAIRY-MILK (DM) -----	0.	0.	0.	0.
5 POULTRY-MEAT (PM) -----	0.	0.	0.02	0.
6 POULTRY-EGGS (PE) -----	0.	0.	-0.07	0.
7 WHEAT (WH) -----	0.	0.	0.08	0.
8 CORN (CN) -----	-0.07	0.05	0.06	0.
9 OTHER COARSE GRAINS (CG) -	0.2	-0.07	0.1	0.
10 RICE (RI) -----	0.	0.001	-0.005	0.
11 SOYBEANS (SB) -----	0.	0.	-0.01	-0.09
12 OTHER OILSEEDS (OS) -----	0.	0.	-0.01	0.
13 SOYMEAL (SM) -----	0.	0.	-0.05	-0.01
14 SOYOIL (SO) -----	0.	0.	-0.06	0.
15 OTHER MEALS (OM) -----	0.	0.	-0.01	-0.01
16 OTHER OILS (OO) -----	0.	0.	-0.06	0.
17 DAIRY-BUTTER (DB) -----	0.	0.	-0.05	0.01
18 DAIRY-CHEESE (DC) -----	0.	0.	-0.05	0.
19 DAIRY-OTHER PRODUCTS (DO)	0.	0.	-0.02	-0.01

	OTHER OILSEEDS (OS)	SOYMEAL (SM)	SOYOIL (SO)	OTHER MEALS (OM)
1 BEEF+VEAL (BF) -----	0.	0.	0.	0.
2 PORK (PK) -----	0.	0.	0.	0.
3 MUTTON+LAMB (ML) -----	0.	0.	0.	0.
4 DAIRY-MILK (DM) -----	0.	0.	0.	0.
5 POULTRY-MEAT (PM) -----	0.	0.	0.	0.
6 POULTRY-EGGS (PE) -----	0.	0.	0.	0.
7 WHEAT (WH) -----	0.	0.	0.	0.
8 CORN (CN) -----	0.	0.	0.	0.
9 OTHER COARSE GRAINS (CG) -	0.	0.	0.	0.
10 RICE (RI) -----	0.	0.	0.	0.
11 SOYBEANS (SB) -----	0.	0.	0.	0.
12 OTHER OILSEEDS (OS) -----	-0.01	0.	0.	0.
13 SOYMEAL (SM) -----	0.	-0.07	0.	0.
14 SOYOIL (SO) -----	0.	0.	-0.1	0.
15 OTHER MEALS (OM) -----	0.	0.	0.01	-0.08
16 OTHER OILS (OO) -----	0.	0.	0.3	0.
17 DAIRY-BUTTER (DB) -----	0.	0.01	0.01	0.
18 DAIRY-CHEESE (DC) -----	0.	0.	0.	0.
19 DAIRY-OTHER PRODUCTS (DO)	0.	0.	0.	0.

Continued —

Table 11 (Cont.)—Demand elasticities, Japan

	OTHER OILS (OO)	DAIRY-BUTTER (DB)	DAIRY-CHEESE (DC)	DAIRY-OTHER PRODUCTS (DO)
1 BEEF+VEAL (BF) -----	0.	0.	0.01	0.
2 PORK (PK) -----	0.	0.	0.	0.
3 MUTTON+LAMB (ML) -----	0.	0.	0.	0.
4 DAIRY-MILK (DM) -----	0.	0.	0.	0.
5 POULTRY-MEAT (PM) -----	0.	0.	0.	0.
6 POULTRY-EGGS (PE) -----	0.	0.	0.	0.
7 WHEAT (WH) -----	0.	0.	0.	0.
8 CORN (CN) -----	0.	0.	0.	0.
9 OTHER COARSE GRAINS (CG) -	0.	0.	0.	0.
10 RICE (RI) -----	0.	0.	0.	0.
11 SOYBEANS (SB) -----	0.	0.	0.	0.
12 OTHER OILSEEDS (OS) -----	0.	0.	0.	0.
13 SOYMEAL (SM) -----	0.	0.	0.	0.
14 SOYOIL (SO) -----	0.11	0.	0.	0.
15 OTHER MEALS (OM) -----	0.	0.	0.	0.
16 OTHER OILS (OO) -----	-0.35	0.	0.	0.
17 DAIRY-BUTTER (DB) -----	0.	-0.35	0.	0.
18 DAIRY-CHEESE (DC) -----	0.	0.	-1.11	0.
19 DAIRY-OTHER PRODUCTS (DO)	0.	0.	0.	-0.1

	NON-GOL ITEMS 1/	INCOME (IN)
1 BEEF+VEAL (BF) -----	-1.04	1.45
2 PORK (PK) -----	-0.85	0.8
3 MUTTON+LAMB (ML) -----	-0.14	0.71
4 DAIRY-MILK (DM) -----	-0.37	0.5
5 POULTRY-MEAT (PM) -----	-0.33	0.45
6 POULTRY-EGGS (PE) -----	-0.128	0.14
7 WHEAT (WH) -----	-0.43	0.3
8 CORN (CN) -----	-0.21	0.04
9 OTHER COARSE GRAINS (CG) -	-0.4	0.01
10 RICE (RI) -----	-0.0074	-0.02
11 SOYBEANS (SB) -----	-0.09	0.07
12 OTHER OILSEEDS (OS) -----	-0.11	0.01
13 SOYMEAL (SM) -----	0.04	0.08
14 SOYOIL (SO) -----	-0.63	0.7
15 OTHER MEALS (OM) -----	-0.07	0.07
16 OTHER OILS (OO) -----	-0.57	0.7
17 DAIRY-BUTTER (DB) -----	-0.58	0.77
18 DAIRY-CHEESE (DC) -----	0.05	0.93
19 DAIRY-OTHER PRODUCTS (DO)	-0.31	0.4

1/ ELASTICITY WITH RESPECT TO NON-GOL ITEMS IS IMPLIED BY THE ELASTICITIES AND FUNCTIONAL FORM OF THE DEMAND EQUATION.

Table 12--Feed demand elasticities, Japan

	INTERCEPTS FOR FEED DEMAND EQUATIONS (I)	WHEAT (WH)	CORN (CN)
7 WHEAT (WH) -----	0.00352	-0.7	0.3
8 CORN (CN) -----	0.162653	0.05	-.25
9 OTHER COARSE GRAINS (CG)	0.078	0.	0.1
13 SOYMEAL (SM)-----	0.016541	0.01	0.08
15 OTHER MEALS (OM)-----	0.028793	0.01	0.15

	OTHER COARSE GRAINS (CG)	SOYMEAL (SM)	OTHER MEALS (OM)
7 WHEAT (WH) -----	0.16	0.21	0.03
8 CORN (CN) -----	0.05	0.02	0.01
9 OTHER COARSE GRAINS (CG)	-0.34	0.08	0.04
13 SOYMEAL (SM)-----	0.15	-0.3	0.15
14 OTHER MEALS (OM)-----	0.27	0.5	-0.5

	LIVESTOCK PRICES 1/
7 WHEAT (WH) -----	-2.980232E-08
8 CORN (CN) -----	0.12
9 OTHER COARSE GRAINS (CG)	0.12
13 SOYMEAL (SM)-----	-0.09
15 OTHER MEALS (OM)-----	-0.43

1/ ELASTICITIES WITH RESPECT TO LIVESTOCK PRICES IS IMPLIED BY THE ELASTICITIES AND FUNCTIONAL FORM OF THE FEED DEMAND EQUATION.

Table 13--Oilseed crushing elasticities, Japan

	SHARE OF OILSEED WEIGHT GOING TO MEAL (QS***M)	SHARE OF OILSEED WEIGHT GOING TO OIL (QS***O)	INTERCEPTS FOR OILSEED CRUSHING EQUATIONS (I)
11 SOYBEANS (SB) -----	0.77	0.18	1767.44
12 OTHER OILSEEDS (OS)	0.55	0.40	416.64

	OILSEED CRUSHING ELASTICITY (PM) <u>1/</u>	GROWTH RATE (TR)
11 SOYBEANS (SB) -----	0.01	0.03
12 OTHER OILSEEDS (OS)	0.01	0.05

1/ OILSEED CRUSH WITH RESPECT TO CRUSHING MARGIN RATIO.

Table 14--Stock elasticities, Japan

	INTERCEPTS FOR STOCK EQUATIONS (I)	STOCK ELASTICITIES <u>1/</u>
1 BEEF+VEAL (BF) -----	0.049341	0.
2 PORK (PK) -----	0.025035	-0.15
3 MUTTON+LAMB (ML) -----	0.233058	0.
5 POULTRY-MEAT (PM) -----	0.007535	0.
6 POULTRY-EGGS (PE) -----	0.000289	0.
7 WHEAT (WH) -----	0.085	-0.91
8 CORN (CN) -----	0.016349	-1.45
9 OTHER COARSE GRAINS (CG) -	0.04392	-1.35
10 RICE (RI) -----	0.15	-0.24
11 SOYBEANS (SB) -----	0.146541	0.
12 OTHER OILSEEDS (OS) -----	0.077681	0.
13 SOYMEAL (SM) -----	0.0162	0.
14 SOYOIL (SO) -----	0.015067	0.
15 OTHER MEALS (OM) -----	0.017472	0.
16 OTHER OILS (OO) -----	0.027994	0.
17 DAIRY-BUTTER (DB) -----	0.313866	0.
18 DAIRY-CHEESE (DC) -----	0.08119	0.
19 DAIRY-OTHER PRODUCTS (DO)	0.199389	0.

1/ STOCK SHARE ELASTICITIES WITH RESPECT TO (OWN/NON-GOL PRICES).

Table 15--Domestic and trade margin shares, Japan

	SHARE OF DOMESTIC MARGIN TO DEMAND PRICE	SHARE OF TRADE MARGIN TO DEMAND PRICE
1 BEEF+VEAL (BF) -----	0.3550	0.7026
2 PORK (PK) -----	0.5254	0.3954
4 DAIRY-MILK (DM) -----	0.6287	NA
5 POULTRY-MEAT (PM) -----	0.6598	0.5656
6 POULTRY-EGGS (PE) -----	0.2151	0.1578
7 WHEAT (WH) -----	0.	0.1797
9 OTHER COARSE GRAINS (CG) -	0.	0.1492
11 SOYBEANS (SB) -----	0.	0.5190
13 SOYMEAL (SM) -----	0.	0.2969
14 SOYOIL (SO) -----	0.	0.6288
15 OTHER MEALS (OM) -----	0.	0.3293
17 DAIRY-BUTTER (DB) -----	0.1767	0.5729
18 DAIRY-CHEESE (DC) -----	0.	0.5849
19 DAIRY-OTHER PRODUCTS (DO)	0.5388	0.8527

Table 16--Subsidy elasticities, Japan

	INTERCEPTS FOR SUBSIDY EQUATIONS (I)	LAGGED RICE STOCKS
WHEAT PRODUCTION (SPWH)-----	0.78	0.44
OTHER COARSE GRAIN PRODUCTION (SPCG)-	0.69	0.44
RICE PRODUCTION (SPRI)-----	5298.16	-0.965
RICE EXPORTS (SERI)-----	1.399	0.00097

	LAGGED OWN SUBSIDY	TIME
WHEAT PRODUCTION (SPWH)-----	0.	0.4
OTHER COARSE GRAIN PRODUCTION (SPCG)-	0.	0.4
RICE PRODUCTION (SPRI)-----	0.428	0.4
RICE EXPORTS (SERI)-----	0.715	0.4

Tariff barriers still permit world (trade) price fluctuations to be transmitted to the domestic market, although in a distorted manner. However, the more common form of agricultural protection in Japan is through nontariff measures, which in effect cut the linkage between domestic and world market prices.

In this model, quantitative restrictions are introduced by means of "if-then" statements, and an iterative solution technique (Gauss-Seidel) is used to solve the set of nonlinear equations. These "if-then" switching statements in effect disconnect domestic prices from trade prices when trade is restricted by quotas or is nonexistent. Under these circumstances, additional equations estimate the domestic market clearing prices so that the model iterates to a set of prices that clear the domestic markets, given fixed trade quantities.

VALIDATION AND SIMULATION OF THE MODEL

The JPGOL model is an annual simulation model of Japan's grain, oilseeds, and livestock economy. It can be run as a stand-alone country model, or as a component of the world grain, oilseeds, and livestock (GOL) agricultural trade model. Discussions here focus on stand-alone model simulation. Simulating the model requires data or projections for the exogenous variables and beginning values for the endogenous variables. The base year for the model is 1976. Since the JPGOL model is designed to provide projections of Japan's grain, oilseeds, and livestock sectors until the year 2000 under alternative scenarios, the values of exogenous variables must also be projected through the year 2000.

To examine the performance of the model, we have tested its stability using actual exogenous data over the historical period from 1976 to 1980. The percentage differences between historical and simulated values of the endogenous variables were computed to determine how well the model replicated historical data. Other statistics such as the root mean square percent error and the standard deviation between simulated and actual values were evaluated. In general the root mean square percent errors are reasonably low. The largest percent errors usually occur for variables with the smallest magnitudes. Trade quantities and carry-over stocks have larger relative errors than supply and demand. High errors on trade are to be expected, since trade absorbs much of the random variation in domestic demand and supply. Some values of parameters and elasticities were revised during the process of testing the model. The current set of coefficients does provide a stable solution.

Table 17 presents the root mean square percent errors for selected endogenous variables. Errors on crop areas range from 7 percent on total area to 91 percent on wheat area. Since a small portion of total cropland is devoted to wheat, soybeans, and corn, tracking these crop areas is particularly difficult. Errors on crop yields are relatively low, with the highest (15 percent) on wheat yield. Errors on livestock product supply are fairly low, except for some dairy products, poultry meat, and mutton and lamb. Errors on food demand for various commodities are relatively low on livestock products. Errors are relatively high on coarse grains and other meal demands. These commodities are primarily for feed and industrial uses; it is difficult to track the historical series of these variables.

After the model was tested and adjusted for the period 1976-80, it was simulated through the year 2000. Income, population, supply growth trends,

Table 17--Root mean square percent error, selected endogenous variables, JPGOL model, 1976-80

Variable	: RMS	:	Variable	: RMS	:	Variable	: RMS	:	Variable	: RMS
1/	: percent	:	1/	: percent	:	1/	: percent	:	1/	: percent
	: error	:		: error	:		: error	:		: error
JPARG	: 21.2	:	JPPDBF	7.9	:	JPQDDM	5.9	:	JPQSBF	4.5
JPARCN	: 44.7	:	JPPDCG	21.3	:	JPQDDO	20.4	:	JPQSDB	25.6
JPAROS	: 12.2	:	JPPDDB	29.6	:	JPQDML	33.7	:	JPQSDC	9.8
JPARRI	: 11.3	:	JPPDDC	8.2	:	JPQDOO	8.6	:	JPQSDM	7.8
JPARSB	: 46.7	:	JPPDDM	5.1	:	JPQDOS	18.6	:	JPQSDO	29.6
JPARTT	: 7.0	:	JPPDDO	42.6	:	JPQDPE	10.3	:	JPQSML	18.9
JPARWH	: 91.0	:	JPPDOM	22.0	:	JPQDPK	4.4	:	JPQSPE	4.6
JPLABF	: 5.6	:	JPPDPE	10.0	:	JPQDPM	14.7	:	JPQSPK	6.9
JPLAPK	: 4.8	:	JPPDPK	5.2	:	JPQDRI	6.0	:	JPQSPM	19.9
JPLNBF	: 1.0	:	JPPDPM	28.4	:	JPQDSB	9.8	:	JPYDCG	13.8
JPLNDM	: 13.0	:	JPPDRI	8.4	:	JPQDSM	14.1	:	JPYDCN	6.3
JPLNML	: 9.1	:	JPPDSB	30.7	:	JPQDSO	8.3	:	JPYDOS	13.2
JPLNPE	: 15.9	:	JPPDSM	9.3	:	JPQDWH	7.1	:	JPYDRI	9.3
JPLNPK	: 3.9	:	JPPDSO	45.0	:	JPQFCG	20.8	:	JPYDSB	7.8
JPLSBF	: 8.5	:	JPPDWH	23.9	:	JPQFCN	33.0	:	JPYDWH	15.1
JPLSPK	: 6.2	:	JPQDBF	6.9	:	JPQFOM	116.8	:		
JPQCOS	: 10.4	:	JPQDDB	10.9	:	JPQFSM	23.6	:		
JPQCSB	: 6.0	:	JPQDDC	10.3	:	JPQFWH	43.1	:		

1/ Variable definition is found in appendix A, a computer-generated listing of JPGOL model.

and policy assumptions are the major driving forces of projections. Population was assumed to grow at a rate of 0.5 percent per year over the period 1981 to 2000, and real income was assumed to grow at an annual rate of 5.0 percent overall, or 4.5 percent per capita. Assumptions on other exogenous price indices were an annual growth rate of 7.5 percent for the general consumer price index (used as a proxy for the non-GOL price index), 6 percent for the fish price index, and 5.6 percent for both the index of the cost of production and the index of crop input prices. Trade prices of GOL commodities were assumed to grow at the same rate as the general price index. Continuation of current trade policies was assumed. For example, the current beef import tariff was assumed to remain in place, while the beef import quota was assumed to continue increasing by about 5 percent per year, reaching 313,000 MT in the year 2000. The base projections of major feed grains and livestock products generated by the JPGOL model are roughly in line with other ERS projections and official Japanese projections for 1990 (table 18).

In addition to providing baseline projections, the JPGOL model can also be used for evaluating the effects of changes in trade policies. As an example, a comparative static analysis of the anticipated effects of changes in Japan's beef import quotas is presented here.

The JPGOL base run (shown in table 18) assumed that the current 25 percent ad valorem import tariff would be maintained through the year 2000, while beef import quotas would be raised by about 5 percent per year. Then the model was simulated under the assumption of completely removing beef tariff and quota restrictions in 1981 and thereafter. Comparison of these alternative simulations shows that if all beef import restrictions were to be removed, then beef demand would increase by about 55 percent in the year 2000 (table 19). Japan's beef imports would more than double in 1990, and more than triple in 2000. Domestic beef prices would drop by 29 percent in 1990 and 45 percent in 2000. However, Japanese beef production would be reduced by only 6 to 9 percent. The impacts on other commodity sectors would vary. Generally, livestock product demand would be most affected. For example, under the scenario of removing beef import restrictions, lower beef prices would reduce the demand for pork, poultry, eggs, and dairy products. The substitution of imported beef for locally produced livestock products also would reduce Japanese feed demand for coarse grains and meals.

CONCLUDING REMARKS

This report presents a 19-commodity grain, oilseeds, and livestock model of Japan. It accounts for cross-commodity substitution effects which often have been ignored in single-commodity models. The model can be used to project Japan's grain, oilseeds, and livestock economy in terms of demand, production, trade, and prices. The model also can analyze the effects of trade restrictions on domestic commodity markets.

In addition to simulating the model in a stand-alone mode as a single country agricultural sectoral model, researchers can link the JPGOL model to other GOL country and regional models in a world model system. Linkage to other GOL component models and the world market clearing mechanism via TROLL's LINKMOD feature (5) can provide a useful tool to analyze major policy effects in a global context for major trading countries. The linkage mechanism is explained in the documentation of the world GOL model by Liu and Roningen (7).

Table 18--Alternative projections of livestock products and feed grains
1990 and 2000

Commodity	Actual 1980	MAFF 1/ 1990	ERS I 1/ 1990	ERS II 1/ 1990	JPGOL 1990 : 2000	
					<u>1000 metric tons</u>	
Meat:						
Consumption--						
Total meats	4930	6245	7049			
Beef and veal	590	890	1130	1278	810	1173
Pork	1677	2030	2630	2928	2150	3329
Poultry--meat	1222	1570	1932	2184	1713	2774
Poultry--eggs	2124	2250	2430	2730	2803	3629
Production--						
Beef & Veal	418	630	529	569	598	864
Pork	1396	1940	2498	2799	2069	3323
Poultry--meat	1145	1460	1868	2112	1477	2258
Poultry--eggs	1973	2220	2390	2695	2409	2910
Feed grains:						
Total consumption	19197		29659	32762	25453	28055
Production	400		577	577	428	498
Imports	18863		29082	32185	25030	27593

1/ Projections published in (1). The MAFF projections were previously published in The Long-Term Prospects for the Demand and Supply of Agricultural Products, released by MAFF, Government of Japan, November 1980. ERS I and ERS II projections are based on Coyle's assumptions (1), including higher income elasticities of demand for livestock products than those implied by MAFF. ERS II projections assume lower fish consumption than ERS I.

Table 19--Selected simulation results from changes in Japanese
beef import restrictions

Commodity	Base run with beef		In absence of		Difference from	
	import quota		beef quota		base run	
	1990	2000	1990	2000	1990	2000
	-----1000 metric tons-----				----Percent----	
Beef:						
Demand quantity	810	1173	1031	1823	27	55
Production	598	864	561	784	-6	-9
Import	214	313	473	1046	121	234
Demand price <u>1/</u>	9909	28982	7064	15960	29	-45
Other commodities:						
Demand quantity--						
Pork	2150	3329	2040	2932	-5	-12
Poultry--meat	1713	2774	1634	2594	-5	-7
Eggs	2803	3629	2790	3603	-0.5	-0.7
Rice	11294	11649	11294	11648	0	0
Wheat	6727	7466	6624	7273	-2	-3
Coarse grains:						
Feed demand	22943	25518	22274	23924	-3	-6

1/ Price is in yen per kilogram.

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APPENDIX A

MODEL : JPGOL

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[-----[
[ NOTATION FOR ERS GRAIN, OILSEED, AND LIVESTOCK (GOL) MODEL : SYMBOL AND [
[ VARIABLE NAMES CONTAIN UP TO 8 CHARACTERS AND ARE FOLLOWED BY A SUFFIX [
[ WHICH SHOWS THE DECLARATION (E.G. CONSTANT, ENDOGENOUS VARIABLE, ETC.). [
[ THE FIRST 2 CHARACTERS ARE THE COUNTRY CODE AND THE NEXT 2, AN EQUATION [
[ 'TYPE' CODE. THE NEXT 2 CHARACTERS ARE USUALLY A 2 DIGIT COMMODITY CODE. [
[ AN ELASTICITY WILL HAVE 2 MORE CHARACTERS INDICATING THE CODE TO WHICH [
[ THE ELASTICITY RELATES. GENERALLY, THE NUMBER OF CHARACTERS IN A SYMBOL [
[ HAS A MEANING: 5 CHAR. = COUNTRY SPECIFIC VARIABLE, 6 CHAR. = COUNTRY [
[ AND COMMODITY SPECIFIC VARIABLE, 7 CHAR.(ENDING WITH 'I') = EQUATION [
[ INTERCEPT, 8 CHAR. = COEFFICIENT/ELASTICITY. [
[ COMMODITY CODES ARE: [
[   BF = BEEF+VEAL          PK = PORK          ML = MUTTON+LAMB(+GOAT) [
[   DM = DAIRY-MILK         PM = POULTRY-MEAT    PE = POULTRY-EGGS [
[   WH = WHEAT              CN = CORN           CG = OTHER COARSE GRAINS [
[   RI = RICE               SB = SOYBEANS        OS = OTHER OILSEEDS [
[   SM = SOYMEAL            SO = SOYOIL         OM = OTHER MEALS [
[   OO = OTHER OILS        DB = DAIRY-BUTTER    DC = DAIRY-CHEESE [
[   DO = DAIRY-OTHER PRODUCTS [
[ EQUATION 'TYPE' CODES ARE: [
[   MD = MARGIN-DOMESTIC      MT = MARGIN-TRADE [
[   PS = PRICE-SUPPLY        AR = AREA [
[   YD = YIELD               QS = QUANTITY-SUPPLIED [
[   QC = QUANTITY-CRUSHED    FC = FEED COST [
[   LN = LIVESTOCK-NUMBERS   LA = LIVESTOCK-ADDITIONS [
[   LS = LIVESTOCK-SLAUGHTER QF = QUANTITY-FEED [
[   QD = QUANTITY-FOOD AND OTHER DEMAND SK = ENDING STOCKS [
[   QT = QUANTITY-TRADED    PD = PRICE-DEMAND [
[   PE = PRICE ESTIMATE (DEMAND) WITH TRADE RESTRICTIONS [
[ POLICY VARIABLE CODES ARE : [
[   EQ = EXPORT QUOTA        MQ = IMPORT QUOTA    TE = TAX-EXPORTS [
[   TM = TAX-IMPORTS        TP = TAX-PRODUCTION   TC = TAX-CONSUMPTION [
[ ]
```

SYMBOL DECLARATIONS

ENDOGENOUS:

```
JPARCG - CROP AREA * OTHER COARSE GRAINS (1000 HECTARES)
JPARN - CROP AREA * CORN (1000 HECTARES)
JPARG - CROP AREA * OTHER OILSEEDS (1000 HECTARES)
JPARRI - CROP AREA * RICE (1000 HECTARES)
JPASB - CROP AREA * SOYBEANS (1000 HECTARES)
JPARTT - TOTAL CROP AREA (1000 HECTARES)
JPARWH - CROP AREA * WHEAT (1000 HECTARES)
JPLABF - LIVESTOCK ADDITIONS * BEEF+VEAL (1000)
JPLAML - LIVESTOCK ADDITIONS * MUTTON+LAMB (1000)
JPLAPK - LIVESTOCK ADDITIONS * PORK (1000)
JPLNBF - LIVESTOCK NUMBERS * BEEF+VEAL (1000)
JPLNDM - LIVESTOCK NUMBERS * DAIRY-MILK (1000)
JPLNML - LIVESTOCK NUMBERS * MUTTON+LAMB (1000)
JPLNPE - LIVESTOCK NUMBERS * POULTRY-EGGS (1000)
JPLNPK - LIVESTOCK NUMBERS * PORK (1000)
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JPLSBF - LIVESTOCK SLAUGHTER * BEEF+VEAL (1000)
 JPLSML - LIVESTOCK SLAUGHTER * MUTTON+LAMB (1000)
 JPLSPK - LIVESTOCK SLAUGHTER * PORK (1000)
 JPMDBF - MARGIN (DOMESTIC) * BEEF+VEAL (JPYEN/MT)
 JPMDDb - MARGIN (DOMESTIC) * DAIRY-BUTTER (JPYEN/MT)
 JPMDDM - MARGIN (DOMESTIC) * DAIRY-MILK (JPYEN/MT)
 JPMDDO - MARGIN (DOMESTIC) * DAIRY-OTHER PRODUCTS (JPYEN/MT)
 JPMDPE - MARGIN (DOMESTIC) * POULTRY-EGGS (JPYEN/MT)
 JPMDPK - MARGIN (DOMESTIC) * PORK (JPYEN/MT)
 JPMDPM - MARGIN (DOMESTIC) * POULTRY-MEAT (JPYEN/MT)
 JPMTBF - MARGIN (TRADE) * BEEF+VEAL (JPYEN/MT)
 JPMTCG - MARGIN (TRADE) * OTHER COARSE GRAINS (JPYEN/MT)
 JPMTDB - MARGIN (TRADE) * DAIRY-BUTTER (JPYEN/MT)
 JPMTDC - MARGIN (TRADE) * DAIRY-CHEESE (JPYEN/MT)
 JPMTDO - MARGIN (TRADE) * DAIRY-OTHER PRODUCTS (JPYEN/MT)
 JPMTOM - MARGIN (TRADE) * OTHER MEALS (JPYEN/MT)
 JPMTPE - MARGIN (TRADE) * POULTRY-EGGS (JPYEN/MT)
 JPMPK - MARGIN (TRADE) * PORK (JPYEN/MT)
 JPMPM - MARGIN (TRADE) * POULTRY-MEAT (JPYEN/MT)
 JPMTSB - MARGIN (TRADE) * SOYBEANS (JPYEN/MT)
 JPMTSM - MARGIN (TRADE) * SOYMEAL (JPYEN/MT)
 JPMTSO - MARGIN (TRADE) * SOYOIL (JPYEN/MT)
 JPMTWH - MARGIN (TRADE) * WHEAT (JPYEN/MT)
 JPPDBF - PRICE (DEMAND) * BEEF+VEAL (JP YEN/MT)
 JPPDCG - PRICE (DEMAND) * OTHER COARSE GRAINS (JP YEN/MT)
 JPPDCN - PRICE (DEMAND) * CORN (JP YEN/MT)
 JPPDDB - PRICE (DEMAND) * DAIRY-BUTTER (JP YEN/MT)
 JPPDDC - PRICE (DEMAND) * DAIRY-CHEESE (JP YEN/MT)
 JPPDDM - PRICE (DEMAND) * DAIRY-MILK (JP YEN/MT)
 JPPDDO - PRICE (DEMAND) * DAIRY-OTHER PRODUCTS (JP YEN/MT)
 JPPDML - PRICE (DEMAND) * MUTTON+LAMB (JP YEN/MT)
 JPPDOM - PRICE (DEMAND) * OTHER MEALS (JP YEN/MT)
 JPPDOO - PRICE (DEMAND) * OTHER OILS (JP YEN/MT)
 JPPDOS - PRICE (DEMAND) * OTHER OILSEEDS (JP YEN/MT)
 JPPDPE - PRICE (DEMAND) * POULTRY-EGGS (JP YEN/MT)
 JPPDPK - PRICE (DEMAND) * PORK (JP YEN/MT)
 JPPDPM - PRICE (DEMAND) * POULTRY-MEAT (JP YEN/MT)
 JPPDRI - PRICE (DEMAND) * RICE (JP YEN/MT)
 JPPDSB - PRICE (DEMAND) * SOYBEANS (JP YEN/MT)
 JPPDSM - PRICE (DEMAND) * SOYMEAL (JP YEN/MT)
 JPPDSO - PRICE (DEMAND) * SOYOIL (JP YEN/MT)
 JPPDWH - PRICE (DEMAND) * WHEAT (JP YEN/MT)
 JPPTBF - PRICE (TRADE) * BEEF+VEAL (JP YEN/MT)
 JPPTCG - PRICE (TRADE) * OTHER COARSE GRAINS (JP YEN/MT)
 JPPTCN - PRICE (TRADE) * CORN (JP YEN/MT)
 JPPTDB - PRICE (TRADE) * DAIRY-BUTTER (JP YEN/MT)
 JPPTDC - PRICE (TRADE) * DAIRY-CHEESE (JP YEN/MT)
 JPPTDO - PRICE (TRADE) * DAIRY-OTHER PRODUCTS (JP YEN/MT)
 JPPTML - PRICE (TRADE) * MUTTON+LAMB (JP YEN/MT)
 JPPTOM - PRICE (TRADE) * OTHER MEALS (JP YEN/MT)
 JPPTOO - PRICE (TRADE) * OTHER OILS (JP YEN/MT)
 JPPTOS - PRICE (TRADE) * OTHER OILSEEDS (JP YEN/MT)
 JPPTPE - PRICE (TRADE) * POULTRY-EGGS (JP YEN/MT)
 JPPTPK - PRICE (TRADE) * PORK (JP YEN/MT)
 JPPTPM - PRICE (TRADE) * POULTRY-MEAT (JP YEN/MT)
 JPPTRI - PRICE (TRADE) * RICE (JP YEN/MT)

JPPTSB - PRICE (TRADE) * SOYBEANS (JP YEN/MT)
 JPPTSM - PRICE (TRADE) * SOYMEAL (JP YEN/MT)
 JPPTSO - PRICE (TRADE) * SOYOIL (JP YEN/MT)
 JPPTWH - PRICE (TRADE) * WHEAT (JP YEN/MT)
 JPQCOS - QUANTITY CRUSHED * OTHER OILSEEDS (1000 MT)
 JPQCSB - QUANTITY CRUSHED * SOYBEANS (1000 MT)
 JPQDBF - QUANTITY DEMANDED * BEEF+VEAL (1000 MT)
 JPQDCG - QUANTITY DEMANDED * OTHER COARSE GRAINS (1000 MT)
 JPQDCN - QUANTITY DEMANDED * CORN (1000 MT)
 JPQddb - QUANTITY DEMANDED * DAIRY-BUTTER (1000 MT)
 JPQDDC - QUANTITY DEMANDED * DAIRY-CHEESE (1000 MT)
 JPQDDM - QUANTITY DEMANDED * DAIRY-MILK (1000 MT)
 JPQDDO - QUANTITY DEMANDED * DAIRY-OTHER PRODUCTS (1000 MT)
 JPQDML - QUANTITY DEMANDED * MUTTON+LAMB (1000 MT)
 JPQDOM - QUANTITY DEMANDED * OTHER MEALS (1000 MT)
 JPQDOO - QUANTITY DEMANDED * OTHER OILS (1000 MT)
 JPQDOS - QUANTITY DEMANDED * OTHER OILSEEDS (1000 MT)
 JPQDPE - QUANTITY DEMANDED * POULTRY-EGGS (1000 MT)
 JPQDPK - QUANTITY DEMANDED * PORK (1000 MT)
 JPQDPM - QUANTITY DEMANDED * POULTRY-MEAT (1000 MT)
 JPQDRI - QUANTITY DEMANDED * RICE (1000 MT)
 JPQDSB - QUANTITY DEMANDED * SOYBEANS (1000 MT)
 JPQDSM - QUANTITY DEMANDED * SOYMEAL (1000 MT)
 JPQDSO - QUANTITY DEMANDED * SOYOIL (1000 MT)
 JPQDWH - QUANTITY DEMANDED * WHEAT (1000 MT)
 JPQFCG - QUANT. DEMANDED FOR FEED * OTHER COARSE GRAINS (1000 MT)
 JPQFCN - QUANT. DEMANDED FOR FEED * CORN (1000 MT)
 JPQFOM - QUANT. DEMANDED FOR FEED * OTHER MEALS (1000 MT)
 JPQFSM - QUANT. DEMANDED FOR FEED * SOYMEAL (1000 MT)
 JPQFWH - QUANT. DEMANDED FOR FEED * WHEAT (1000 MT)
 JPQSBF - QUANTITY SUPPLIED * BEEF+VEAL (1000 MT)
 JPQSDB - QUANTITY SUPPLIED * DAIRY-BUTTER (1000 MT)
 JPQSDC - QUANTITY SUPPLIED * DAIRY-CHEESE (1000 MT)
 JPQSDM - QUANTITY SUPPLIED * DAIRY-MILK (1000 MT)
 JPQSDO - QUANTITY SUPPLIED * DAIRY-OTHER PRODUCTS (1000 MT)
 JPQSML - QUANTITY SUPPLIED * MUTTON+LAMB (1000 MT)
 JPQSPE - QUANTITY SUPPLIED * POULTRY-EGGS (1000 MT)
 JPQSPK - QUANTITY SUPPLIED * PORK (1000 MT)
 JPQSPM - QUANTITY SUPPLIED * POULTRY-MEAT (1000 MT)
 JPQTBF - QUANTITY TRADED * BEEF+VEAL (1000 MT)
 JPQTCG - QUANTITY TRADED * OTHER COARSE GRAINS (1000 MT)
 JPQTCN - QUANTITY TRADED * CORN (1000 MT)
 JPQTDB - QUANTITY TRADED * DAIRY-BUTTER (1000 MT)
 JPQTDC - QUANTITY TRADED * DAIRY-CHEESE (1000 MT)
 JPQTD0 - QUANTITY TRADED * DAIRY-OTHER PRODUCTS (1000 MT)
 JPQTML - QUANTITY TRADED * MUTTON+LAMB (1000 MT)
 JPQTOM - QUANTITY TRADED * OTHER MEALS (1000 MT)
 JPQTOO - QUANTITY TRADED * OTHER OILS (1000 MT)
 JPQTOS - QUANTITY TRADED * OTHER OILSEEDS (1000 MT)
 JPQTPE - QUANTITY TRADED * POULTRY-EGGS (1000 MT)
 JPQTPK - QUANTITY TRADED * PORK (1000 MT)
 JPQTPM - QUANTITY TRADED * POULTRY-MEAT (1000 MT)
 JPQTRI - QUANTITY TRADED * RICE (1000 MT)
 JPQTSB - QUANTITY TRADED * SOYBEANS (1000 MT)
 JPQTSM - QUANTITY TRADED * SOYMEAL (1000 MT)
 JPQTSO - QUANTITY TRADED * SOYOIL (1000 MT)

JPQTWH - QUANTITY TRADED *WHEAT (1000 MT)
 JPSERI - SUBSIDY (EXPORT) * RICE (JP YEN/MT)
 JPSKBF - ENDING STOCKS * BEEF+VEAL (1000 MT)
 JPSKCG - ENDING STOCKS * OTHER COARSE GRAIN (1000 MT)
 JPSKCN - ENDING STOCKS * CORN (1000 MT)
 JPSKDB - ENDING STOCKS * DAIRY-BUTTER (1000 MT)
 JPSKDC - ENDING STOCKS * DAIRY-CHEESE (1000 MT)
 JPSKDO - ENDING STOCKS * DAIRY-OTHER PRODUCTS (1000 MT)
 JPSKML - ENDING STOCKS * MUTTON+LAMB (1000 MT)
 JPSKOM - ENDING STOCKS * OTHER MEALS (1000 MT)
 JPSKOO - ENDING STOCKS * OTHER OILS (1000 MT)
 JPSKOS - ENDING STOCKS * OTHER OILSEEDS (1000 MT)
 JPSKPE - ENDING STOCKS * POULTRY-EGGS (1000 MT)
 JPSKPK - ENDING STOCKS * PORK (1000 MT)
 JPSKPM - ENDING STOCKS * POULTRY-MEAT (1000 MT)
 JPSKRI - ENDING STOCKS * RICE (1000 MT)
 JPSKSB - ENDING STOCKS * SOYBEANS (1000 MT)
 JPSKSM - ENDING STOCKS * SOYMEAL (1000 MT)
 JPSKSO - ENDING STOCKS * SOYOIL (1000 MT)
 JPSKWH - ENDING STOCKS * WHEAT (1000 MT)
 JPSPCG - SUBSIDY (PRODUCTION) * OTHER COARSE GRAINS (JP YEN/MT)
 JPSPRI - SUBSIDY (PRODUCTION) * RICE (JP YEN/MT)
 JPSPWH - SUBSIDY (PRODUCTION) * WHEAT (JP YEN/MT)
 JPTERI - TAX(+)/SUBSIDY(-) (EXPORT) * RICE (JP YEN/MT)
 JPTECG - TAX(+)/SUBSIDY(-) (PRODUCTION) * OTHER COARSE GRAINS (JPYEN/MT)
 JPTEPRI - TAX(+)/SUBSIDY(-) (PRODUCTION) * RICE (JP YEN/MT)
 JPTEPWH - TAX(+)/SUBSIDY(-) (PRODUCTION) * WHEAT (JPYEN/MT)
 JPYDCG - CROP YIELD * OTHER COARSE GRAINS (MT/HECTARE)
 JPYDCN - CROP YIELD * CORN (MT/HECTARE)
 JPYDOS - CROP YIELD * OTHER OILSEEDS (MT/HECTARE)
 JPYDRI - CROP YIELD * RICE (MT/HECTARE)
 JPYDSB - CROP YIELD * SOYBEANS (MT/HECTARE)
 JPYDWH - CROP YIELD * WHEAT (MT/HECTARE)

DEFINITION:

JPFCBF - FEED COST * BEEF+VEAL (JPYEN/MT)
 JPFCDM - FEED COST * DAIRY-MILK (JPYEN/MT)
 JPFCML - FEED COST * MUTTON+LAMB (JPYEN/MT)
 JPFCPE - FEED COST * POULTRY-EGGS (JPYEN/MT)
 JPFCPK - FEED COST * PORK (JPYEN/MT)
 JPFCPM - FEED COST * POULTRY-MEAT (JPYEN/MT)
 JPGCAU - GRAIN CONSUMING ANIMAL UNIT (FOR FEED DEMAND)
 JPLPI - LIVESTOCK PRICE INDEX (WEIGHTED) FOR FEED DEMAND
 JPOSPM - RATIO OF OTHER OILSEEDS CRUSHING RETURNS TO COSTS
 JPPCBF - PRICE CONSTRAINT (DEFINITION) * BEEF+VEAL
 JPPCCG - PRICE CONSTRAINT (DEFINITION) * OTHER COARSE GRAINS
 JPPCCN - PRICE CONSTRAINT (DEFINITION) * CORN
 JPPCDB - PRICE CONSTRAINT (DEFINITION) * DAIRY-BUTTER
 JPPCDC - PRICE CONSTRAINT (DEFINITION) * DAIRY-CHEESE
 JPPCDO - PRICE CONSTRAINT (DEFINITION) * DAIRY-OTHER PRODUCTS
 JPPCML - PRICE CONSTRAINT (DEFINITION) * MUTTON+LAMB
 JPPCOM - PRICE CONSTRAINT (DEFINITION) * OTHER MEALS
 JPPCOO - PRICE CONSTRAINT (DEFINITION) * OTHER OILS
 JPPCOS - PRICE CONSTRAINT (DEFINITION) * OTHER OILSEEDS
 JPPCPE - PRICE CONSTRAINT (DEFINITION) * POULTRY-EGGS
 JPPCPK - PRICE CONSTRAINT (DEFINITION) * PORK

JPPCPM - PRICE CONSTRAINT (DEFINITION) * POULTRY-MEAT
 JPPCRI - PRICE CONSTRAINT (DEFINITION) * RICE
 JPPCSB - PRICE CONSTRAINT (DEFINITION) * SOYBEANS
 JPPCSM - PRICE CONSTRAINT (DEFINITION) * SOYMEAL
 JPPCSO - PRICE CONSTRAINT (DEFINITION) * SOYOIL
 JPPCWH - PRICE CONSTRAINT (DEFINITION) * WHEAT
 JPPEBF - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * BEEF+VEAL
 JPPECG - PRICE ESTIMATE FOR RESTRICTED TRADE * OTHER C. GRAINS
 JPPECN - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * CORN
 JPPEDB - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * DAIRY-BUTTER
 JPPEDC - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * DAIRY-CHEESE
 JPPEDO - PRICE ESTIMATE FOR RESTRICTED TRADE * DAIRY-OTHER PROD
 JPPEML - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * MUTTON+LAMB
 JPPEOM - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * OTHER MEALS
 JPPEOO - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * OTHER OILS
 JPPEOS - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * OTHER OILSEEDS
 JPPEPE - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * POULTRY-EGGS
 JPPEPK - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * PORK
 JPPEPM - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * POULTRY-MEAT
 JPPERI - PRICE ESTIMATE FOR RESTRICTED TRADE * RICE
 JPPEsb - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * SOYBEANS
 JPPEsm - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * SOYMEAL
 JPPEso - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * SOYOIL
 JPPEWH - PRICE ESTIMATE FOR RESTRICTED TRADE (DEM. DEF) * WHEAT
 JPPRBF - PRICE (ADJUSTMENT) RATIO * BEEF+VEAL
 JPPRCG - PRICE (ADJUSTMENT) RATIO * OTHER COARSE GRAINS
 JPPRCN - PRICE (ADJUSTMENT) RATIO * CORN
 JPPRDB - PRICE (ADJUSTMENT) RATIO * DAIRY-BUTTER
 JPPRDC - PRICE (ADJUSTMENT) RATIO * DAIRY-CHEESE
 JPPRDO - PRICE (ADJUSTMENT) RATIO * DAIRY-OTHER PRODUCTS
 JPPRML - PRICE (ADJUSTMENT) RATIO * MUTTON+LAMB
 JPPROM - PRICE (ADJUSTMENT) RATIO * OTHER MEALS
 JPPROO - PRICE (ADJUSTMENT) RATIO * OTHER OILS
 JPPROS - PRICE (ADJUSTMENT) RATIO * OTHER OILSEEDS
 JPPRPE - PRICE (ADJUSTMENT) RATIO * POULTRY-EGGS
 JPPRPK - PRICE (ADJUSTMENT) RATIO * PORK
 JPPRPM - PRICE (ADJUSTMENT) RATIO * POULTRY-MEAT
 JPPRRI - PRICE (ADJUSTMENT) RATIO * RICE
 JPPRSB - PRICE (ADJUSTMENT) RATIO * SOYBEANS
 JPPRSM - PRICE (ADJUSTMENT) RATIO * SOYMEAL
 JPPRSO - PRICE (ADJUSTMENT) RATIO * SOYOIL
 JPPRWH - PRICE (ADJUSTMENT) RATIO * WHEAT
 JPPSBF - PRICE (SUPPLY) DEFINITION * BEEF+VEAL (JPYEN/MT)
 JPPSCG - PRICE (SUPPLY) DEFINITION * OTHER COARSE GRAINS (JPYEN/MT)
 JPPSCN - PRICE (SUPPLY) DEFINITION * CORN (JPYEN/MT)
 JPPSDB - PRICE (SUPPLY) DEFINITION * DAIRY-BUTTER (JPYEN/MT)
 JPPSDC - PRICE (SUPPLY) DEFINITION * DAIRY-CHEESE (JPYEN/MT)
 JPPSDM - PRICE (SUPPLY) DEFINITION * DAIRY-MILK (JP YEN/MT)
 JPPSDO - PRICE (SUPPLY) DEFINITION * DAIRY-OTHER PRODUCTS (JPYEN/MT)
 JPPSML - PRICE (SUPPLY) DEFINITION * MUTTON+LAMB (JPYEN/MT)
 JPPSOM - PRICE (SUPPLY) DEFINITION * OTHER MEALS (JPYEN/MT)
 JPPSOO - PRICE (SUPPLY) DEFINITION * OTHER OILS (JPYEN/MT)
 JPPSOS - PRICE (SUPPLY) DEFINITION * OTHER OILSEEDS (JPYEN/MT)
 JPPSPE - PRICE (SUPPLY) DEFINITION * POULTRY-EGGS (JPYEN/MT)
 JPPSPK - PRICE (SUPPLY) DEFINITION * PORK (JPYEN/MT)
 JPPSPM - PRICE (SUPPLY) DEFINITION * POULTRY-MEAT (JPYEN/MT)

JPPSRI - PRICE (SUPPLY) DEFINITION * RICE (JP YEN/MT)
 JPPSSB - PRICE (SUPPLY) DEFINITION * SOYBEANS (JPYEN/MT)
 JPPSSM - PRICE (SUPPLY) DEFINITION * SOYMEAL (JPYEN/MT)
 JPPSSO - PRICE (SUPPLY) DEFINITION * SOYOIL (JPYEN/MT)
 JPPSWH - PRICE (SUPPLY) DEFINITION * WHEAT (JPYEN/MT)
 JPQMDM - QUANTITY OF MILK AVAILABLE FOR MANUFACTURING (1000 MT)
 JPQSCG - QUANTITY SUPPLIED * OTHER COARSE GRAINS (1000 MT)
 JPQSCN - QUANTITY SUPPLIED * CORN (1000 MT)
 JPQSOM - QUANTITY SUPPLIED * OTHER MEALS (1000 MT)
 JPQSOO - QUANTITY SUPPLIED * OTHER OILS (1000 MT)
 JPQSOS - QUANTITY SUPPLIED * OTHER OILSEEDS (1000 MT)
 JPQSRI - QUANTITY SUPPLIED * RICE (1000 MT)
 JPQSSB - QUANTITY SUPPLIED * SOYBEANS (1000 MT)
 JPQSSM - QUANTITY SUPPLIED * SOYMEAL (1000 MT)
 JPQSSO - QUANTITY SUPPLIED * SOYOIL (1000 MT)
 JPQSWH - QUANTITY SUPPLIED * WHEAT (1000 MT)
 JPSBPM - RATIO OF SOYBEAN CRUSHING RETURNS TO COSTS
 JPTDBF - TOTAL DEMAND (1000 MT) * BEEF+VEAL
 JPTDCG - TOTAL DEMAND (1000 MT) * OTHER COARSE GRAINS
 JPTDCN - TOTAL DEMAND (1000 MT) * CORN
 JPTddb - TOTAL DEMAND (1000 MT) * DAIRY-BUTTER
 JPTDDC - TOTAL DEMAND (1000 MT) * DAIRY-CHEESE
 JPTDDO - TOTAL DEMAND (1000 MT) * DAIRY-OTHER PRODUCTS
 JPTDML - TOTAL DEMAND (1000 MT) * MUTTON+LAMB
 JPTDOM - TOTAL DEMAND (1000 MT) * OTHER MEALS
 JPTDOO - TOTAL DEMAND (1000 MT) * OTHER OILS
 JPTDOS - TOTAL DEMAND (1000 MT) * OTHER OILSEEDS
 JPTDPE - TOTAL DEMAND (1000 MT) * POULTRY-EGGS
 JPTDPK - TOTAL DEMAND (1000 MT) * PORK
 JPTDPM - TOTAL DEMAND (1000 MT) * POULTRY-MEAT
 JPTDRI - TOTAL DEMAND (1000 MT) * RICE
 JPTDSB - TOTAL DEMAND (1000 MT) * SOYBEANS
 JPTDSM - TOTAL DEMAND (1000 MT) * SOYMEAL
 JPTDSO - TOTAL DEMAND (1000 MT) * SOYOIL
 JPTDWH - TOTAL DEMAND (1000 MT) * WHEAT
 JPTSBF - TOTAL SUPPLY (1000 MT) * BEEF+VEAL
 JPTSCG - TOTAL SUPPLY (1000 MT) * OTHER COARSE GRAINS
 JPTSCN - TOTAL SUPPLY (1000 MT) * CORN
 JPTSDB - TOTAL SUPPLY (1000 MT) * DAIRY-BUTTER
 JPTSDC - TOTAL SUPPLY (1000 MT) * DAIRY-CHEESE
 JPTSDO - TOTAL SUPPLY (1000 MT) * DAIRY-OTHER PRODUCTS
 JPTSML - TOTAL SUPPLY (1000 MT) * MUTTON+LAMB
 JPTSOM - TOTAL SUPPLY (1000 MT) * OTHER MEALS
 JPTSoo - TOTAL SUPPLY (1000 MT) * OTHER OILS
 JPTSOS - TOTAL SUPPLY (1000 MT) * OTHER OILSEEDS
 JPTSPE - TOTAL SUPPLY (1000 MT) * POULTRY-EGGS
 JPTSPK - TOTAL SUPPLY (1000 MT) * PORK
 JPTSPM - TOTAL SUPPLY (1000 MT) * POULTRY-MEAT
 JPTSRI - TOTAL SUPPLY (1000 MT) * RICE
 JPTSSB - TOTAL SUPPLY (1000 MT) * SOYBEANS
 JPTSSM - TOTAL SUPPLY (1000 MT) * SOYMEAL
 JPTSSO - TOTAL SUPPLY (1000 MT) * SOYOIL
 JPTSWH - TOTAL SUPPLY (1000 MT) * WHEAT
 JPTTRL - AVERAGE RETURN TO LAND (1976 JPYEN)

EXOGENOUS:

JPICP	- INDEX OF COST OF PRODUCTION (1976=100)
JPINC	- INCOME (MILLION JP YEN)
JPMDCG	- MARGIN (DOMESTIC) * OTHER COARSE GRAINS (JPYEN/MT)
JPMDCN	- MARGIN (DOMESTIC) * CORN (JPYEN/MT)
JPMDDC	- MARGIN (DOMESTIC) * DAIRY-CHEESE (JPYEN/MT)
JPMDML	- MARGIN (DOMESTIC) * MUTTON+LAMB (JPYEN/MT)
JPMDOM	- MARGIN (DOMESTIC) * OTHER MEALS (JPYEN/MT)
JPMDOO	- MARGIN (DOMESTIC) * OTHER OILS (JPYEN/MT)
JPMDOS	- MARGIN (DOMESTIC) * OTHER OILSEEDS (JPYEN/MT)
JPMDRI	- MARGIN (DOMESTIC) * RICE (JP YEN/MT)
JPMDSB	- MARGIN (DOMESTIC) * SOYBEANS (JPYEN/MT)
JPMDSM	- MARGIN (DOMESTIC) * SOYMEAL (JPYEN/MT)
JPMDSO	- MARGIN (DOMESTIC) * SOYOIL (JPYEN/MT)
JPMDWH	- MARGIN (DOMESTIC) * WHEAT (JPYEN/MT)
JPMTCN	- MARGIN (TRADE) * CORN (JPYEN/MT)
JPMTML	- MARGIN (TRADE) * MUTTON+LAMB (JPYEN/MT)
JPMTOO	- MARGIN (TRADE) * OTHER OILS (JPYEN/MT)
JPMTOS	- MARGIN (TRADE) * OTHER OILSEEDS (JPYEN/MT)
JPMTRI	- MARGIN (TRADE) * RICE (JPYEN/MT)
JPPDFI	- DEMAND PRICE INDEX * FISH
JPPIN	- PRICE INDEX OF CROP INPUTS (FERTILIZER, ETC., 1976=100)
JPPNG	- PRICE INDEX OF NON-GOL ITEMS (1976=100)
JPPOP	- POPULATION (MILLION)
JPWIN	- WEATHER INDEX
TIME	- TIME
WDPTBF	- WORLD PRICE (TRADE) * BEEF+VEAL (JP YEN/MT)
WDPTCG	- WORLD PRICE (TRADE) * OTHER COARSE GRAINS (JP YEN/MT)
WDPTCN	- WORLD PRICE (TRADE) * CORN (JP YEN/MT)
WDPTDB	- WORLD PRICE (TRADE) * DAIRY-BUTTER (JP YEN/MT)
WDPTDC	- WORLD PRICE (TRADE) * DAIRY-CHEESE (JP YEN/MT)
WDPTDO	- WORLD PRICE (TRADE) * DAIRY-OTHER PRODUCTS (JP YEN/MT)
WDPTML	- WORLD PRICE (TRADE) * MUTTON+LAMB (JP YEN/MT)
WDPTOM	- WORLD PRICE (TRADE) * OTHER MEALS (JP YEN/MT)
WDPTOO	- WORLD PRICE (TRADE) * OTHER OILS (JP YEN/MT)
WDPTOS	- WORLD PRICE (TRADE) * OTHER OILSEEDS (JP YEN/MT)
WDPTPE	- WORLD PRICE (TRADE) * POULTRY-EGGS (JP YEN/MT)
WDPTPK	- WORLD PRICE (TRADE) * PORK (JP YEN/MT)
WDPTPM	- WORLD PRICE (TRADE) * POULTRY-MEAT (JP YEN/MT)
WDPTRI	- WORLD PRICE (TRADE) * RICE (JP YEN/MT)
WDPTSB	- WORLD PRICE (TRADE) * SOYBEANS (JP YEN/MT)
WDPTSM	- WORLD PRICE (TRADE) * SOYMEAL (JP YEN/MT)
WDPTSO	- WORLD PRICE (TRADE) * SOYOIL (JP YEN/MT)
WDPTWH	- WORLD PRICE (TRADE) * WHEAT (JP YEN/MT)

POLICY:

JPEQBF	- EXPORT QUOTA * BEEF+VEAL (1000 MT)
JPEQCG	- EXPORT QUOTA * OTHER COARSE GRAINS (1000 MT)
JPEQCN	- EXPORT QUOTA * CORN (1000 MT)
JPEQDB	- EXPORT QUOTA * DAIRY-BUTTER (1000 MT)
JPEQDC	- EXPORT QUOTA * DAIRY-CHEESE (1000 MT)
JPEQDO	- EXPORT QUOTA * DAIRY-OTHER PRODUCTS (1000 MT)
JPEQML	- EXPORT QUOTA * MUTTON+LAMB (1000 MT)
JPEQOM	- EXPORT QUOTA * OTHER MEALS (1000 MT)
JPEQOO	- EXPORT QUOTA * OTHER OILS (1000 MT)
JPEQOS	- EXPORT QUOTA * OTHER OILSEEDS (1000 MT)

JPEQPE - EXPORT QUOTA * POULTRY-EGGS (1000 MT)
 JPEQPK - EXPORT QUOTA * PORK (1000 MT)
 JPEQPM - EXPORT QUOTA * POULTRY-MEAT (1000 MT)
 JPEQRI - EXPORT QUOTA * RICE (1000 MT)
 JPEQSB - EXPORT QUOTA * SOYBEANS (1000 MT)
 JPEQSM - EXPORT QUOTA * SOYMEAL (1000 MT)
 JPEQSO - EXPORT QUOTA * SOYOIL (1000 MT)
 JPEQWH - EXPORT QUOTA * WHEAT (1000 MT)
 JPMQBF - IMPORT QUOTA * BEEF+VEAL (1000 MT)
 JPMQCG - IMPORT QUOTA * OTHER COARSE GRAINS (1000 MT)
 JPMQCN - IMPORT QUOTA * CORN (1000 MT)
 JPMQDB - IMPORT QUOTA * DAIRY-BUTTER (1000 MT)
 JPMQDC - IMPORT QUOTA * DAIRY-CHEESE (1000 MT)
 JPMQDO - IMPORT QUOTA * DAIRY-OTHER PRODUCTS (1000 MT)
 JPMQML - IMPORT QUOTA * MUTTON+LAMB (1000 MT)
 JPMQOM - IMPORT QUOTA * OTHER MEALS (1000 MT)
 JPMQOO - IMPORT QUOTA * OTHER OILS (1000 MT)
 JPMQOS - IMPORT QUOTA * OTHER OILSEEDS (1000 MT)
 JPMQPE - IMPORT QUOTA * POULTRY-EGGS (1000 MT)
 JPMQPK - IMPORT QUOTA * PORK (1000 MT)
 JPMQPM - IMPORT QUOTA * POULTRY-MEAT (1000 MT)
 JPMQRI - IMPORT QUOTA * RICE (1000 MT)
 JPMQSB - IMPORT QUOTA * SOYBEANS (1000 MT)
 JPMQSM - IMPORT QUOTA * SOYMEAL (1000 MT)
 JPMQSO - IMPORT QUOTA * SOYOIL (1000 MT)
 JPMQWH - IMPORT QUOTA * WHEAT (1000 MT)
 JPTCBF - TAX(+)/SUBSIDY(-) (CONSUMPTION) * BEEF+VEAL (JPYEN/MT)
 JPTCCG - TAX(+)/SUBSIDY(-) (CONSUMPTION) * OTHER COARSE GRAINS (JPYEN/MT)
 JPTCCN - TAX(+)/SUBSIDY(-) (CONSUMPTION) * CORN (JPYEN/MT)
 JPTCDB - TAX(+)/SUBSIDY(-) (CONSUMPTION) * DAIRY-BUTTER (JPYEN/MT)
 JPTCDC - TAX(+)/SUBSIDY(-) (CONSUMPTION) * DAIRY-CHEESE (JPYEN/MT)
 JPTCDM - TAX(+)/SUBSIDY(-) (CONSUMPTION) * DAIRY-MILK (JP YEN/MT)
 JPTCDO - TAX(+)/SUBSIDY(-) (CONSUMPTION) * DAIRY-OTHER PRODUCTS (JPYEN/MT)
 JPTCML - TAX(+)/SUBSIDY(-) (CONSUMPTION) * MUTTON+LAMB (JPYEN/MT)
 JPTCOM - TAX(+)/SUBSIDY(-) (CONSUMPTION) * OTHER MEALS (JPYEN/MT)
 JPTCOO - TAX(+)/SUBSIDY(-) (CONSUMPTION) * OTHER OILS (JPYEN/MT)
 JPTCOS - TAX(+)/SUBSIDY(-) (CONSUMPTION) * OTHER OILSEEDS (JPYEN/MT)
 JPTCPE - TAX(+)/SUBSIDY(-) (CONSUMPTION) * POULTRY-EGGS (JPYEN/MT)
 JPTCPK - TAX(+)/SUBSIDY(-) (CONSUMPTION) * PORK (JPYEN/MT)
 JPTCPM - TAX(+)/SUBSIDY(-) (CONSUMPTION) * POULTRY-MEAT (JPYEN/MT)
 JPTCRI - TAX(+)/SUBSIDY(-) (CONSUMPTION) * RICE (JPYEN/MT)
 JPTCSB - TAX(+)/SUBSIDY(-) (CONSUMPTION) * SOYBEANS (JPYEN/MT)
 JPTCSM - TAX(+)/SUBSIDY(-) (CONSUMPTION) * SOYMEAL (JPYEN/MT)
 JPTCSO - TAX(+)/SUBSIDY(-) (CONSUMPTION) * SOYOIL (JPYEN/MT)
 JPTCWH - TAX(+)/SUBSIDY(-) (CONSUMPTION) * WHEAT (JPYEN/MT)
 JPTEBF - TAX(+)/SUBSIDY(-) (EXPORT) * BEEF+VEAL (JP YEN/MT)
 JPTECG - TAX(+)/SUBSIDY(-) (EXPORT) * OTHER COARSE GRAINS (JP YEN/MT)
 JPTECN - TAX(+)/SUBSIDY(-) (EXPORT) * CORN (JP YEN/MT)
 JPTEDB - TAX(+)/SUBSIDY(-) (EXPORT) * DAIRY-BUTTER (JP YEN/MT)
 JPTEDC - TAX(+)/SUBSIDY(-) (EXPORT) * DAIRY-CHEESE (JP YEN/MT)
 JPTEDO - TAX(+)/SUBSIDY(-) (EXPORT) * DAIRY-OTHER PRODUCTS (JP YEN/MT)
 JPTEML - TAX(+)/SUBSIDY(-) (EXPORT) * MUTTON+LAMB (JP YEN/MT)
 JPTEOM - TAX(+)/SUBSIDY(-) (EXPORT) * OTHER MEALS (JP YEN/MT)
 JPTEOO - TAX(+)/SUBSIDY(-) (EXPORT) * OTHER OILS (JP YEN/MT)
 JPTEOS - TAX(+)/SUBSIDY(-) (EXPORT) * OTHER OILSEEDS (JP YEN/MT)
 JPTEPE - TAX(+)/SUBSIDY(-) (EXPORT) * POULTRY-EGGS (JP YEN/MT)

JPTEPK - TAX(+)/SUBSIDY(-) (EXPORT) * PORK (JP YEN/MT)
 JPTEPM - TAX(+)/SUBSIDY(-) (EXPORT) * POULTRY-MEAT (JP YEN/MT)
 JPTESB - TAX(+)/SUBSIDY(-) (EXPORT) * SOYBEANS (JP YEN/MT)
 JPTESM - TAX(+)/SUBSIDY(-) (EXPORT) * SOYMEAL (JP YEN/MT)
 JPTESO - TAX(+)/SUBSIDY(-) (EXPORT) * SOYOIL (JP YEN/MT)
 JPTEWH - TAX(+)/SUBSIDY(-) (EXPORT) * WHEAT (JP YEN/MT)
 JPTMBF - TARIFF(+)/SUBSIDY(-) (IMPORT) * BEEF+VEAL (JP YEN/MT)
 JPTMCG - TARIFF(+)/SUBSIDY(-) (IMPORT) * OTHER COARSE GRAINS (JP YEN/MT)
 JPTMCN - TARIFF(+)/SUBSIDY(-) (IMPORT) * CORN (JP YEN/MT)
 JPTMDB - TARIFF(+)/SUBSIDY(-) (IMPORT) * DAIRY-BUTTER (JP YEN/MT)
 JPTMDC - TARIFF(+)/SUBSIDY(-) (IMPORT) * DAIRY-CHEESE (JP YEN/MT)
 JPTMDO - TARIFF(+)/SUBSIDY(-) (IMPORT) * DAIRY-OTHER PRODUCTS (JP YEN/MT)
 JPTMML - TARIFF(+)/SUBSIDY(-) (IMPORT) * MUTTON+LAMB (JP YEN/MT)
 JPTMOM - TARIFF(+)/SUBSIDY(-) (IMPORT) * OTHER MEALS (JP YEN/MT)
 JPTMOO - TARIFF(+)/SUBSIDY(-) (IMPORT) * OTHER OILS (JP YEN/MT)
 JPTMOS - TARIFF(+)/SUBSIDY(-) (IMPORT) * OTHER OILSEEDS (JP YEN/MT)
 JPTMPE - TARIFF(+)/SUBSIDY(-) (IMPORT) * POULTRY-EGGS (JP YEN/MT)
 JPTMPK - TARIFF(+)/SUBSIDY(-) (IMPORT) * PORK (JP YEN/MT)
 JPTMPM - TARIFF(+)/SUBSIDY(-) (IMPORT) * POULTRY-MEAT (JP YEN/MT)
 JPTMRI - TARIFF(+)/SUBSIDY(-) (IMPORT) * RICE (JP YEN/MT)
 JPTMSB - TARIFF(+)/SUBSIDY(-) (IMPORT) * SOYBEANS (JP YEN/MT)
 JPTMSM - TARIFF(+)/SUBSIDY(-) (IMPORT) * SOYMEAL (JP YEN/MT)
 JPTMSO - TARIFF(+)/SUBSIDY(-) (IMPORT) * SOYOIL (JP YEN/MT)
 JPTMWH - TARIFF(+)/SUBSIDY(-) (IMPORT) * WHEAT (JP YEN/MT)
 JPTPBF - TAX(+)/SUBSIDY(-) (PRODUCTION) * BEEF+VEAL (JPYEN/MT)
 JPTPCN - TAX(+)/SUBSIDY(-) (PRODUCTION) * CORN (JPYEN/MT)
 JPTPDB - TAX(+)/SUBSIDY(-) (PRODUCTION) * DAIRY-BUTTER (JPYEN/MT)
 JPTPDC - TAX(+)/SUBSIDY(-) (PRODUCTION) * DAIRY-CHEESE (JPYEN/MT)
 JPTPDM - TAX(+)/SUBSIDY(-) (PRODUCTION) * DAIRY-MILK (JPYEN/MT)
 JPTPDO - TAX(+)/SUBSIDY(-) (PRODUCTION) * DAIRY-OTHER PRODUCTS (JPYEN/MT)
 JPTPML - TAX(+)/SUBSIDY(-) (PRODUCTION) * MUTTON+LAMB (JPYEN/MT)
 JPTPOM - TAX(+)/SUBSIDY(-) (PRODUCTION) * OTHER MEALS (JPYEN/MT)
 JPTPOO - TAX(+)/SUBSIDY(-) (PRODUCTION) * OTHER OILS (JPYEN/MT)
 JPTPOS - TAX(+)/SUBSIDY(-) (PRODUCTION) * OTHER OILSEEDS (JPYEN/MT)
 JPTPPE - TAX(+)/SUBSIDY(-) (PRODUCTION) * POULTRY-EGGS (JPYEN/MT)
 JPTPPK - TAX(+)/SUBSIDY(-) (PRODUCTION) * PORK (JPYEN/MT)
 JPTPPM - TAX(+)/SUBSIDY(-) (PRODUCTION) * POULTRY-MEAT (JPYEN/MT)
 JPTPSB - TAX(+)/SUBSIDY(-) (PRODUCTION) * SOYBEANS (JPYEN/MT)
 JPTPSM - TAX(+)/SUBSIDY(-) (PRODUCTION) * SOYMEAL (JPYEN/MT)
 JPTPSO - TAX(+)/SUBSIDY(-) (PRODUCTION) * SOYOIL (JPYEN/MT)

FUNCTION:
 ABSV

COEFFICIENT:

JPARCGCG - AREA ELAS. * OTHER COARSE GRAINS WRT OTHER COARSE GRAINS
 JPARCGCN - AREA ELAS. * OTHER COARSE GRAINS WRT CORN
 JPARCGI - INTERCEPT OF CROP AREA EQUATION * OTHER COARSE GRAINS
 JPARCGOS - AREA ELAS. * OTHER COARSE GRAINS WRT OTHER OILSEEDS
 JPARCGRI - AREA ELAS. * OTHER COARSE GRAINS WRT RICE
 JPARCGSB - AREA ELAS. * OTHER COARSE GRAINS WRT SOYBEANS
 JPARCGWH - AREA ELAS. * OTHER COARSE GRAINS WRT WHEAT
 JPARCNCG - AREA ELAS. * CORN WRT OTHER COARSE GRAINS
 JPARCNCN - AREA ELAS. * CORN WRT CORN
 JPARCNI - INTERCEPT OF CROP AREA EQUATION * CORN
 JPARCNOS - AREA ELAS. * CORN WRT OTHER OILSEEDS

JPARCNRI - AREA ELAS. * CORN WRT RICE
 JPARCNSB - AREA ELAS. * CORN WRT SOYBEANS
 JPARCNWH - AREA ELAS. * CORN WRT WHEAT
 JPAROSCG - AREA ELAS. * OTHER OILSEEDS WRT OTHER COARSE GRAINS
 JPAROSCN - AREA ELAS. * OTHER OILSEEDS WRT CORN
 JPAROSI - INTERCEPT OF CROP AREA EQUATION * OTHER OILSEEDS
 JPAROSOS - AREA ELAS. * OTHER OILSEEDS WRT OTHER OILSEEDS
 JPAROSRI - AREA ELAS. * OTHER OILSEEDS WRT RICE
 JPAROSSB - AREA ELAS. * OTHER OILSEEDS WRT SOYBEANS
 JPAROSWH - AREA ELAS. * OTHER OILSEEDS WRT WHEAT
 JPARRICG - AREA ELAS. * RICE WRT OTHER COARSE GRAINS
 JPARRICN - AREA ELAS. * RICE WRT CORN
 JPARRII - INTERCEPT OF CROP AREA EQUATION * RICE
 JPARRIOS - AREA ELAS. * RICE WRT OTHER OILSEEDS
 JPARRIRI - AREA ELAS. * RICE WRT RICE
 JPARRISB - AREA ELAS. * RICE WRT SOYBEANS
 JPARRIWH - AREA ELAS. * RICE WRT WHEAT
 JPARSBCG - AREA ELAS. * SOYBEANS WRT OTHER COARSE GRAINS
 JPARSBCN - AREA ELAS. * SOYBEANS WRT CORN
 JPARSBI - INTERCEPT OF CROP AREA EQUATION * SOYBEANS
 JPARSBOS - AREA ELAS. * SOYBEANS WRT OTHER OILSEEDS
 JPARSBRI - AREA ELAS. * SOYBEANS WRT RICE
 JPARSBSB - AREA ELAS. * SOYBEANS WRT SOYBEANS
 JPARSBWH - AREA ELAS. * SOYBEANS WRT WHEAT
 JPARTTI - INTERCEPT OF TOTAL CROP AREA EQUATION
 JPARTTRL - TOTAL FARMLAND AREA ELASTICITY (WRT REAL RETURN ON LAND)
 JPARTTTR - ANNUAL GROWTH RATE OF FARMLAND
 JPARWHCG - AREA ELAS. * WHEAT WRT OTHER COARSE GRAINS
 JPARWHCN - AREA ELAS. * WHEAT WRT CORN
 JPARWHI - INTERCEPT OF CROP AREA EQUATION * WHEAT
 JPARWHOS - AREA ELAS. * WHEAT WRT OTHER OILSEEDS
 JPARWHRI - AREA ELAS. * WHEAT WRT RICE
 JPARWHSB - AREA ELAS. * WHEAT WRT SOYBEANS
 JPARWHWH - AREA ELAS. * WHEAT WRT WHEAT
 JPLABFI - INTERCEPT OF LIVESTOCK ADDITION EQ. * BEEF+VEAL
 JPLABFPC - CUR. PRICE ELAST. LIVESTOCK ADDITIONS * BEEF+VEAL
 JPLABFPL - LAG. PRICE ELAST. LIVESTOCK ADDITIONS * BEEF+VEAL
 JPLAMLI - INTERCEPT OF LIVESTOCK ADDITION EQ. * MUTTON+LAMB
 JPLAMLPC - CUR. PRICE ELAST. LIVESTOCK ADDITIONS * MUTTON+LAMB
 JPLAMLPL - LAG. PRICE ELAST. LIVESTOCK ADDITIONS * MUTTON+LAMB
 JPLAPKI - INTERCEPT OF LIVESTOCK ADDITION EQ. * PORK
 JPLAPKPC - CUR. PRICE ELAST. LIVESTOCK ADDITIONS * PORK
 JPLAPKPL - LAG. PRICE ELAST. LIVESTOCK ADDITIONS * PORK
 JPLNDMI - INTERCEPT OF LIVESTOCK NUMBERS EQUATION * DAIRY-MILK
 JPLNDMLG - NUMBERS ELASTICITY WRT LAGGED NUMBERS * DAIRY-MILK
 JPLNDMPC - CUR. PRICE ELAST. LIVESTOCK NUMBERS * DAIRY-MILK
 JPLNDMPL - LAG. PRICE ELAST. LIVESTOCK NUMBERS * DAIRY-MILK
 JPLNPEI - INTERCEPT OF LIVESTOCK NUMBERS EQ. * POULTRY-EGGS
 JPLNPELG - NUMBERS ELASTICITY WRT LAGGED NUMBERS * POULTRY-EGGS
 JPLNPEPC - CUR. PRICE ELAST. LIVESTOCK NUMBERS * POULTRY-EGGS
 JPLNPEPL - LAG. PRICE ELAST. LIVESTOCK NUMBERS * POULTRY-EGGS
 JPLSBFI - INTERCEPT OF LIVESTOCK SLAUGHTER EQ. * BEEF+VEAL
 JPLSBFPC - CUR. PRICE ELAST. LIVESTOCK SLAUGHTER * BEEF+VEAL
 JPLSBFPL - LAG. PRICE ELAST. LIVESTOCK SLAUGHTER * BEEF+VEAL
 JPLSMLI - INTERCEPT OF LIVESTOCK SLAUGHTER EQ. * MUTTON+LAMB
 JPLSMLPC - CUR. PRICE ELAST. LIVESTOCK SLAUGHTER * MUTTON+LAMB

JPLSMLPL - LAG. PRICE ELAST. LIVESTOCK SLAUGHTER * MUTTON+LAMB
 JPLSPKI - INTERCEPT OF LIVESTOCK SLAUGHTER EQ. * PORK
 JPLSPKPC - CUR. PRICE ELAST. LIVESTOCK SLAUGHTER * PORK
 JPLSPKPL - LAG. PRICE ELAST. LIVESTOCK SLAUGHTER * PORK
 JPMDBFI - INTERCEPT OF DOMESTIC MARGIN EQUATION * BEEF+VEAL
 JPMDBFPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * BEEF+VEAL
 JPMDBFPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * BEEF+VEAL
 JPMDDBI - INTERCEPT OF DOMESTIC MARGIN EQUATION * DAIRY-BUTTER
 JPMDDBPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * DAIRY-BUTTER
 JPMDDBPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * DAIRY-BUTTER
 JPMDDMI - INTERCEPT OF DOMESTIC MARGIN EQUATION * DAIRY-MILK
 JPMDDMPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * DAIRY-MILK
 JPMDDMPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * DAIRY-MILK
 JPMDDOI - INTERCEPT OF DOMESTIC MARGIN EQUATION * DAIRY-OTHER PRODUCTS
 JPMDDOPC - DOM. MARG. ELAST. WRT CUR. NON-GOL PRICE * DAIRY OTHER PRODUCTS
 JPMDDOPL - DOM. MARG. ELAST. WRT LAG. NON-GOL PRICE * DAIRY OTHER PRODUCTS
 JPMDEPI - INTERCEPT OF DOMESTIC MARGIN EQUATION * POULTRY-EGGS
 JPMDEPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * POULTRY-EGGS
 JPMDEPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * POULTRY-EGGS
 JPMDPKI - INTERCEPT OF DOMESTIC MARGIN EQUATION * PORK
 JPMDPKPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * PORK
 JPMDPKPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * PORK
 JPMDPMI - INTERCEPT OF DOMESTIC MARGIN EQUATION * POULTRY-MEAT
 JPMDPMPC - DOMESTIC MARGIN ELAST. WRT CUR. NON-GOL PRICE * POULTRY-MEAT
 JPMDPMPL - DOMESTIC MARGIN ELAST. WRT LAG. NON-GOL PRICE * POULTRY-MEAT
 JPMTBFI - INTERCEPT OF TRADE MARGIN EQUATION * BEEF+VEAL
 JPMTBFPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * BEEF+VEAL
 JPMTBFPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * BEEF+VEAL
 JPMTCGI - INTERCEPT OF TRADE MARGIN EQUATION * OTHER COARSE GRAINS
 JPMTCGPC - TRADE MARG. ELAST. WRT CUR. NON-GOL PRICE * OTHER COARSE GRAINS
 JPMTCGPL - TRADE MARG. ELAST. WRT LAG. NON-GOL PRICE * OTHER COARSE GRAINS
 JPMTDBI - INTERCEPT OF TRADE MARGIN EQUATION * DAIRY-BUTTER
 JPMTDBPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * DAIRY-BUTTER
 JPMTDBPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * DAIRY-BUTTER
 JPMTDCI - INTERCEPT OF TRADE MARGIN EQUATION * DAIRY-CHEESE
 JPMTDCPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * DAIRY-CHEESE
 JPMTDCPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * DAIRY-CHEESE
 JPMTDOI - INTERCEPT OF TRADE MARGIN EQUATION * DAIRY-OTHER PRODUCTS
 JPMTDOPC - TRADE MARG. ELAS. WRT CUR. NON-GOL PRICE * DAIRY-OTHER PRODUCTS
 JPMTDOPL - TRADE MARG. ELAS. WRT LAG. NON-GOL PRICE * DAIRY-OTHER PRODUCTS
 JPMTOMI - INTERCEPT OF TRADE MARGIN EQUATION * OTHER MEALS
 JPMTOMPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * OTHER MEALS
 JPMTOMPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * OTHER MEALS
 JPMTPEI - INTERCEPT OF TRADE MARGIN EQUATION * POULTRY-EGGS
 JPMTPEPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * POULTRY-EGGS
 JPMTPEPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * POULTRY-EGGS
 JPMTPKI - INTERCEPT OF TRADE MARGIN EQUATION * PORK
 JPMTPKPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * PORK
 JPMTPKPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * PORK
 JPMTPMI - INTERCEPT OF TRADE MARGIN EQUATION * POULTRY-MEAT
 JPMTPMPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * POULTRY-MEAT
 JPMTPMPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * POULTRY-MEAT
 JPMTSBI - INTERCEPT OF TRADE MARGIN EQUATION * SOYBEANS
 JPMTSBPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * SOYBEANS
 JPMTSBPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * SOYBEANS
 JPMTSMI - INTERCEPT OF TRADE MARGIN EQUATION * SOYMEAL

JPMTSMPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * SOYMEAL
 JPMTSMPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * SOYMEAL
 JPMTSOI - INTERCEPT OF TRADE MARGIN EQUATION * SOYOIL
 JPMTSOPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * SOYOIL
 JPMTSOPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * SOYOIL
 JPMTWHI - INTERCEPT OF TRADE MARGIN EQUATION * WHEAT
 JPMTWHPC - TRADE MARGIN ELAST. WRT CUR. NON-GOL PRICE * WHEAT
 JPMTWHPL - TRADE MARGIN ELAST. WRT LAG. NON-GOL PRICE * WHEAT
 JPPDDMI - INTERCEPT OF DEMAND PRICE EQUATION * DAIRY-MILK
 JPQCOSI - INTERCEPT OF CRUSHING DEMAND EQUATION * OTHER OILSEEDS
 JPQCOSPM - CRUSHING DEMAND ELAST. * OTHER OILSEEDS WRT CRUSH. MARG.
 JPQCOSTR - ANNUAL GROWTH RATE OF OTHER OILSEEDS CRUSHING DEMAND
 JPQCSBI - INTERCEPT OF CRUSHING DEMAND EQUATION * SOYBEANS
 JPQCSBPM - CRUSHING DEMAND ELAST. * SOYBEANS WRT CRUSH. MARG.
 JPQCSBTR - ANNUAL GROWTH RATE OF SOYBEAN CRUSHING DEMAND
 JPQDBFBF - DEMAND ELAST. * BEEF+VEAL WRT BEEF+VEAL
 JPQDBFCG - DEMAND ELAST. * BEEF+VEAL WRT OTHER COARSE GRAINS
 JPQDBFCN - DEMAND ELAST. * BEEF+VEAL WRT CORN
 JPQDBFDB - DEMAND ELAST. * BEEF+VEAL WRT DAIRY-BUTTER
 JPQDBFDC - DEMAND ELAST. * BEEF+VEAL WRT DAIRY-CHEESE
 JPQDBFDM - DEMAND ELAST. * BEEF+VEAL WRT DAIRY-MILK
 JPQDBFDO - DEMAND ELAST. * BEEF+VEAL WRT DAIRY-OTHER PRODUCTS
 JPQDBFFI - DEMAND ELAST. * BEEF WRT FISH
 JPQDBFI - INTERCEPT OF DEMAND EQUATION * BEEF+VEAL
 JPQDBFIN - DEMAND ELAST. * BEEF+VEAL WRT INCOME
 JPQDBFML - DEMAND ELAST. * BEEF+VEAL WRT MUTTON+LAMB
 JPQDBFOM - DEMAND ELAST. * BEEF+VEAL WRT OTHER MEALS
 JPQDBFOO - DEMAND ELAST. * BEEF+VEAL WRT OTHER OILS
 JPQDBFOS - DEMAND ELAST. * BEEF+VEAL WRT OTHER OILSEEDS
 JPQDBFPE - DEMAND ELAST. * BEEF+VEAL WRT POULTRY-EGGS
 JPQDBFPK - DEMAND ELAST. * BEEF+VEAL WRT PORK
 JPQDBFPM - DEMAND ELAST. * BEEF+VEAL WRT POULTRY-MEAT
 JPQDBFRI - DEMAND ELAST. * BEEF+VEAL WRT RICE
 JPQDBFSB - DEMAND ELAST. * BEEF+VEAL WRT SOYBEANS
 JPQDBFSM - DEMAND ELAST. * BEEF+VEAL WRT SOYMEAL
 JPQDBFSO - DEMAND ELAST. * BEEF+VEAL WRT SOYOIL
 JPQDBFWH - DEMAND ELAST. * BEEF+VEAL WRT WHEAT
 JPQDCGBF - DEMAND ELAST. * OTHER COARSE GRAINS WRT BEEF+VEAL
 JPQDCGCG - DEMAND ELAST. * OTHER COARSE GRAINS WRT OTHER COARSE GRAINS
 JPQDCGCN - DEMAND ELAST. * OTHER COARSE GRAINS WRT CORN
 JPQDCGDB - DEMAND ELAST. * OTHER COARSE GRAINS WRT DAIRY-BUTTER
 JPQDCGDC - DEMAND ELAST. * OTHER COARSE GRAINS WRT DAIRY-CHEESE
 JPQDCGDM - DEMAND ELAST. * OTHER COARSE GRAINS WRT DAIRY-MILK
 JPQDCGDO - DEMAND ELAST. * OTHER COARSE GRAINS WRT DAIRY-OTHER PRODUCTS
 JPQDCGI - INTERCEPT OF DEMAND EQUATION * OTHER COARSE GRAINS
 JPQDCGIN - DEMAND ELAST. * OTHER COARSE GRAINS WRT INCOME
 JPQDCGML - DEMAND ELAST. * OTHER COARSE GRAINS WRT MUTTON+LAMB
 JPQDCGOM - DEMAND ELAST. * OTHER COARSE GRAINS WRT OTHER MEALS
 JPQDCGOO - DEMAND ELAST. * OTHER COARSE GRAINS WRT OTHER OILS
 JPQDCGOS - DEMAND ELAST. * OTHER COARSE GRAINS WRT OTHER OILSEEDS
 JPQDCGPE - DEMAND ELAST. * OTHER COARSE GRAINS WRT POULTRY-EGGS
 JPQDCGPK - DEMAND ELAST. * OTHER COARSE GRAINS WRT PORK
 JPQDCGPM - DEMAND ELAST. * OTHER COARSE GRAINS WRT POULTRY-MEAT
 JPQDCGRI - DEMAND ELAST. * OTHER COARSE GRAINS WRT RICE
 JPQDCGSB - DEMAND ELAST. * OTHER COARSE GRAINS WRT SOYBEANS
 JPQDCGSM - DEMAND ELAST. * OTHER COARSE GRAINS WRT SOYMEAL

JPQDCGSO - DEMAND ELAST. * OTHER COARSE GRAINS WRT SOYOIL
 JPQDCGWH - DEMAND ELAST. * OTHER COARSE GRAINS WRT WHEAT
 JPQDCNBF - DEMAND ELAST. * CORN WRT BEEF+VEAL
 JPQDCNCG - DEMAND ELAST. * CORN WRT OTHER COARSE GRAINS
 JPQDCNCN - DEMAND ELAST. * CORN WRT CORN
 JPQDCNDB - DEMAND ELAST. * CORN WRT DAIRY-BUTTER
 JPQDCNDC - DEMAND ELAST. * CORN WRT DAIRY-CHEESE
 JPQDCNDM - DEMAND ELAST. * CORN WRT DAIRY-MILK
 JPQDCNDO - DEMAND ELAST. * CORN WRT DAIRY-OTHER PRODUCTS
 JPQDCNI - INTERCEPT OF DEMAND EQUATION * CORN
 JPQDCNIN - DEMAND ELAST. * CORN WRT INCOME
 JPQDCNML - DEMAND ELAST. * CORN WRT MUTTON+LAMB
 JPQDCNOM - DEMAND ELAST. * CORN WRT OTHER MEALS
 JPQDCNOO - DEMAND ELAST. * CORN WRT OTHER OILS
 JPQDCNOS - DEMAND ELAST. * CORN WRT OTHER OILSEEDS
 JPQDCNPE - DEMAND ELAST. * CORN WRT POULTRY-EGGS
 JPQDCNPK - DEMAND ELAST. * CORN WRT PORK
 JPQDCNPM - DEMAND ELAST. * CORN WRT POULTRY-MEAT
 JPQDCNRI - DEMAND ELAST. * CORN WRT RICE
 JPQDCNSB - DEMAND ELAST. * CORN WRT SOYBEANS
 JPQDCNSM - DEMAND ELAST. * CORN WRT SOYMEAL
 JPQDCNSO - DEMAND ELAST. * CORN WRT SOYOIL
 JPQDCNWH - DEMAND ELAST. * CORN WRT WHEAT
 JPQDDBBF - DEMAND ELAST. * DAIRY-BUTTER WRT BEEF+VEAL
 JPQDDBCG - DEMAND ELAST. * DAIRY-BUTTER WRT OTHER COARSE GRAINS
 JPQDDBCN - DEMAND ELAST. * DAIRY-BUTTER WRT CORN
 JPQDDBDB - DEMAND ELAST. * DAIRY-BUTTER WRT DAIRY-BUTTER
 JPQDDBDC - DEMAND ELAST. * DAIRY-BUTTER WRT DAIRY-CHEESE
 JPQDDBDM - DEMAND ELAST. * DAIRY-BUTTER WRT DAIRY-MILK
 JPQDDBDO - DEMAND ELAST. * DAIRY-BUTTER WRT DAIRY-OTHER PRODUCTS
 JPQDDBI - INTERCEPT OF DEMAND EQUATION * DAIRY-BUTTER
 JPQDDBIN - DEMAND ELAST. * DAIRY-BUTTER WRT INCOME
 JPQDDBML - DEMAND ELAST. * DAIRY-BUTTER WRT MUTTON+LAMB
 JPQDDBOM - DEMAND ELAST. * DAIRY-BUTTER WRT OTHER MEALS
 JPQDDBOO - DEMAND ELAST. * DAIRY-BUTTER WRT OTHER OILS
 JPQDDBOS - DEMAND ELAST. * DAIRY-BUTTER WRT OTHER OILSEEDS
 JPQDDBPE - DEMAND ELAST. * DAIRY-BUTTER WRT POULTRY-EGGS
 JPQDDBPK - DEMAND ELAST. * DAIRY-BUTTER WRT PORK
 JPQDDBPM - DEMAND ELAST. * DAIRY-BUTTER WRT POULTRY-MEAT
 JPQDDBRI - DEMAND ELAST. * DAIRY-BUTTER WRT RICE
 JPQDDBSB - DEMAND ELAST. * DAIRY-BUTTER WRT SOYBEANS
 JPQDDBSM - DEMAND ELAST. * DAIRY-BUTTER WRT SOYMEAL
 JPQDDBSO - DEMAND ELAST. * DAIRY-BUTTER WRT SOYOIL
 JPQDDBWH - DEMAND ELAST. * DAIRY-BUTTER WRT WHEAT
 JPQDDCBF - DEMAND ELAST. * DAIRY-CHEESE WRT BEEF+VEAL
 JPQDDCCG - DEMAND ELAST. * DAIRY-CHEESE WRT OTHER COARSE GRAINS
 JPQDDCCN - DEMAND ELAST. * DAIRY-CHEESE WRT CORN
 JPQDDCDB - DEMAND ELAST. * DAIRY-CHEESE WRT DAIRY-BUTTER
 JPQDDCDC - DEMAND ELAST. * DAIRY-CHEESE WRT DAIRY-CHEESE
 JPQDDCDM - DEMAND ELAST. * DAIRY-CHEESE WRT DAIRY-MILK
 JPQDDCDO - DEMAND ELAST. * DAIRY-CHEESE WRT DAIRY-OTHER PRODUCTS
 JPQDDCI - INTERCEPT OF DEMAND EQUATION * DAIRY-CHEESE
 JPQDDCIN - DEMAND ELAST. * DAIRY-CHEESE WRT INCOME
 JPQDDCML - DEMAND ELAST. * DAIRY-CHEESE WRT MUTTON+LAMB
 JPQDDCOM - DEMAND ELAST. * DAIRY-CHEESE WRT OTHER MEALS
 JPQDDCOO - DEMAND ELAST. * DAIRY-CHEESE WRT OTHER OILS

JPQDDCOS - DEMAND ELAST. * DAIRY-CHEESE WRT OTHER OILSEEDS
 JPQDDCPE - DEMAND ELAST. * DAIRY-CHEESE WRT POULTRY-EGGS
 JPQDDCPK - DEMAND ELAST. * DAIRY-CHEESE WRT PORK
 JPQDDCPM - DEMAND ELAST. * DAIRY-CHEESE WRT POULTRY-MEAT
 JPQDDCRI - DEMAND ELAST. * DAIRY-CHEESE WRT RICE
 JPQDDCSB - DEMAND ELAST. * DAIRY-CHEESE WRT SOYBEANS
 JPQDDCSM - DEMAND ELAST. * DAIRY-CHEESE WRT SOYMEAL
 JPQDDCSO - DEMAND ELAST. * DAIRY-CHEESE WRT SOYOIL
 JPQDDCWH - DEMAND ELAST. * DAIRY-CHEESE WRT WHEAT
 JPQDDMBF - DEMAND ELAST. * DAIRY-MILK WRT BEEF+VEAL
 JPQDDMCG - DEMAND ELAST. * DAIRY-MILK WRT OTHER COARSE GRAINS
 JPQDDMCN - DEMAND ELAST. * DAIRY-MILK WRT CORN
 JPQDDMDB - DEMAND ELAST. * DAIRY-MILK WRT DAIRY-BUTTER
 JPQDDMDC - DEMAND ELAST. * DAIRY-MILK WRT DAIRY-CHEESE
 JPQDDMDM - DEMAND ELAST. * DAIRY-MILK WRT DAIRY-MILK
 JPQDDMDO - DEMAND ELAST. * DAIRY-MILK WRT DAIRY-OTHER PRODUCTS
 JPQDDMI - INTERCEPT OF DEMAND EQUATION * DAIRY-MILK
 JPQDDMIN - DEMAND ELAST. * DAIRY-MILK WRT INCOME
 JPQDDMML - DEMAND ELAST. * DAIRY-MILK WRT MUTTON+LAMB
 JPQDDMOM - DEMAND ELAST. * DAIRY-MILK WRT OTHER MEALS
 JPQDDMOO - DEMAND ELAST. * DAIRY-MILK WRT OTHER OILS
 JPQDDMOS - DEMAND ELAST. * DAIRY-MILK WRT OTHER OILSEEDS
 JPQDDMPE - DEMAND ELAST. * DAIRY-MILK WRT POULTRY-EGGS
 JPQDDMPK - DEMAND ELAST. * DAIRY-MILK WRT PORK
 JPQDDMPM - DEMAND ELAST. * DAIRY-MILK WRT POULTRY-MEAT
 JPQDDMRI - DEMAND ELAST. * DAIRY-MILK WRT RICE
 JPQDDMSB - DEMAND ELAST. * DAIRY-MILK WRT SOYBEANS
 JPQDDMSM - DEMAND ELAST. * DAIRY-MILK WRT SOYMEAL
 JPQDDMSO - DEMAND ELAST. * DAIRY-MILK WRT SOYOIL
 JPQDDMWH - DEMAND ELAST. * DAIRY-MILK WRT WHEAT
 JPQDDOBF - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT BEEF+VEAL
 JPQDDOCG - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT OTHER COARSE GRAINS
 JPQDDOCN - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT CORN
 JPQDDODB - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT DAIRY-BUTTER
 JPQDDODC - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT DAIRY-CHEESE
 JPQDDODM - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT DAIRY-MILK
 JPQDDODO - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT DAIRY-OTHER PRODUCTS
 JPQDDOI - INTERCEPT OF DEMAND EQUATION * DAIRY-OTHER PRODUCTS
 JPQDDOIN - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT INCOME
 JPQDDOML - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT MUTTON+LAMB
 JPQDDOOM - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT OTHER MEALS
 JPQDDOOO - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT OTHER OILS
 JPQDDOOS - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT OTHER OILSEEDS
 JPQDDOPE - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT POULTRY-EGGS
 JPQDDOPK - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT PORK
 JPQDDOPM - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT POULTRY-MEAT
 JPQDDORI - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT RICE
 JPQDDOSB - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT SOYBEANS
 JPQDDOSM - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT SOYMEAL
 JPQDDOSO - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT SOYOIL
 JPQDDOWH - DEMAND ELAST. * DAIRY-OTHER PRODUCTS WRT WHEAT
 JPQDMLBF - DEMAND ELAST. * MUTTON+LAMB WRT BEEF+VEAL
 JPQDMLCG - DEMAND ELAST. * MUTTON+LAMB WRT OTHER COARSE GRAINS
 JPQDMLCN - DEMAND ELAST. * MUTTON+LAMB WRT CORN
 JPQDMLDB - DEMAND ELAST. * MUTTON+LAMB WRT DAIRY-BUTTER
 JPQDMLDC - DEMAND ELAST. * MUTTON+LAMB WRT DAIRY-CHEESE

JPQDMLDM - DEMAND ELAST. * MUTTON+LAMB WRT DAIRY-MILK
 JPQDMLDO - DEMAND ELAST. * MUTTON+LAMB WRT DAIRY-OTHER PRODUCTS
 JPQDMLI - INTERCEPT OF DEMAND EQUATION * MUTTON+LAMB
 JPQDMLIN - DEMAND ELAST. * MUTTON+LAMB WRT INCOME
 JPQDMLML - DEMAND ELAST. * MUTTON+LAMB WRT MUTTON+LAMB
 JPQDMLOM - DEMAND ELAST. * MUTTON+LAMB WRT OTHER MEALS
 JPQDMLOO - DEMAND ELAST. * MUTTON+LAMB WRT OTHER OILS
 JPQDMLOS - DEMAND ELAST. * MUTTON+LAMB WRT OTHER OILSEEDS
 JPQDMLPE - DEMAND ELAST. * MUTTON+LAMB WRT POULTRY-EGGS
 JPQDMLPK - DEMAND ELAST. * MUTTON+LAMB WRT PORK
 JPQDMLPM - DEMAND ELAST. * MUTTON+LAMB WRT POULTRY-MEAT
 JPQDMLRI - DEMAND ELAST. * MUTTON+LAMB WRT RICE
 JPQDMLSB - DEMAND ELAST. * MUTTON+LAMB WRT SOYBEANS
 JPQDMLSM - DEMAND ELAST. * MUTTON+LAMB WRT SOYMEAL
 JPQDMLSO - DEMAND ELAST. * MUTTON+LAMB WRT SOYOIL
 JPQDMLWH - DEMAND ELAST. * MUTTON+LAMB WRT WHEAT
 JPQDOMBF - DEMAND ELAST. * OTHER MEALS WRT BEEF+VEAL
 JPQDOMCG - DEMAND ELAST. * OTHER MEALS WRT OTHER COARSE GRAINS
 JPQDOMCN - DEMAND ELAST. * OTHER MEALS WRT CORN
 JPQDOMDB - DEMAND ELAST. * OTHER MEALS WRT DAIRY-BUTTER
 JPQDOMDC - DEMAND ELAST. * OTHER MEALS WRT DAIRY-CHEESE
 JPQDOMDM - DEMAND ELAST. * OTHER MEALS WRT DAIRY-MILK
 JPQDOMDO - DEMAND ELAST. * OTHER MEALS WRT DAIRY-OTHER PRODUCTS
 JPQDOMI - INTERCEPT OF DEMAND EQUATION * OTHER MEALS
 JPQDOMIN - DEMAND ELAST. * OTHER MEALS WRT INCOME
 JPQDOMML - DEMAND ELAST. * OTHER MEALS WRT MUTTON+LAMB
 JPQDOMOM - DEMAND ELAST. * OTHER MEALS WRT OTHER MEALS
 JPQDOMOO - DEMAND ELAST. * OTHER MEALS WRT OTHER OILS
 JPQDOMOS - DEMAND ELAST. * OTHER MEALS WRT OTHER OILSEEDS
 JPQDOMPE - DEMAND ELAST. * OTHER MEALS WRT POULTRY-EGGS
 JPQDOMPK - DEMAND ELAST. * OTHER MEALS WRT PORK
 JPQDOMPM - DEMAND ELAST. * OTHER MEALS WRT POULTRY-MEAT
 JPQDOMRI - DEMAND ELAST. * OTHER MEALS WRT RICE
 JPQDOMSB - DEMAND ELAST. * OTHER MEALS WRT SOYBEANS
 JPQDOMSM - DEMAND ELAST. * OTHER MEALS WRT SOYMEAL
 JPQDOMSO - DEMAND ELAST. * OTHER MEALS WRT SOYOIL
 JPQDOMWH - DEMAND ELAST. * OTHER MEALS WRT WHEAT
 JPQDOOBF - DEMAND ELAST. * OTHER OILS WRT BEEF+VEAL
 JPQDOOCG - DEMAND ELAST. * OTHER OILS WRT OTHER COARSE GRAINS
 JPQDOOCN - DEMAND ELAST. * OTHER OILS WRT CORN
 JPQDOODB - DEMAND ELAST. * OTHER OILS WRT DAIRY-BUTTER
 JPQDOODC - DEMAND ELAST. * OTHER OILS WRT DAIRY-CHEESE
 JPQDOODM - DEMAND ELAST. * OTHER OILS WRT DAIRY-MILK
 JPQDOODO - DEMAND ELAST. * OTHER OILS WRT DAIRY-OTHER PRODUCTS
 JPQDOOI - INTERCEPT OF DEMAND EQUATION * OTHER OILS
 JPQDOOIN - DEMAND ELAST. * OTHER OILS WRT INCOME
 JPQDOOML - DEMAND ELAST. * OTHER OILS WRT MUTTON+LAMB
 JPQDOOOM - DEMAND ELAST. * OTHER OILS WRT OTHER MEALS
 JPQDOOOO - DEMAND ELAST. * OTHER OILS WRT OTHER OILS
 JPQDOOOS - DEMAND ELAST. * OTHER OILS WRT OTHER OILSEEDS
 JPQDOOPE - DEMAND ELAST. * OTHER OILS WRT POULTRY-EGGS
 JPQDOOPK - DEMAND ELAST. * OTHER OILS WRT PORK
 JPQDOOPM - DEMAND ELAST. * OTHER OILS WRT POULTRY-MEAT
 JPQDOORI - DEMAND ELAST. * OTHER OILS WRT RICE
 JPQDOOSB - DEMAND ELAST. * OTHER OILS WRT SOYBEANS
 JPQDOOSM - DEMAND ELAST. * OTHER OILS WRT SOYMEAL

JPQDOOSO - DEMAND ELAST. * OTHER OILS WRT SOYOIL
 JPQDOOWH - DEMAND ELAST. * OTHER OILS WRT WHEAT
 JPQDOSBF - DEMAND ELAST. * OTHER OILSEEDS WRT BEEF+VEAL
 JPQDOSCG - DEMAND ELAST. * OTHER OILSEEDS WRT OTHER COARSE GRAINS
 JPQDOSCN - DEMAND ELAST. * OTHER OILSEEDS WRT CORN
 JPQDOSDB - DEMAND ELAST. * OTHER OILSEEDS WRT DAIRY-BUTTER
 JPQDOSDC - DEMAND ELAST. * OTHER OILSEEDS WRT DAIRY-CHEESE
 JPQDOSDM - DEMAND ELAST. * OTHER OILSEEDS WRT DAIRY-MILK
 JPQDOSDO - DEMAND ELAST. * OTHER OILSEEDS WRT DAIRY-OTHER PRODUCTS
 JPQDOSI - INTERCEPT OF DEMAND EQUATION * OTHER OILSEEDS
 JPQDOSIN - DEMAND ELAST. * OTHER OILSEEDS WRT INCOME
 JPQDOSML - DEMAND ELAST. * OTHER OILSEEDS WRT MUTTON+LAMB
 JPQDOSOM - DEMAND ELAST. * OTHER OILSEEDS WRT OTHER MEALS
 JPQDOSOO - DEMAND ELAST. * OTHER OILSEEDS WRT OTHER OILS
 JPQDOSOS - DEMAND ELAST. * OTHER OILSEEDS WRT OTHER OILSEEDS
 JPQDOSPE - DEMAND ELAST. * OTHER OILSEEDS WRT POULTRY-EGGS
 JPQDOSPK - DEMAND ELAST. * OTHER OILSEEDS WRT PORK
 JPQDOSPM - DEMAND ELAST. * OTHER OILSEEDS WRT POULTRY-MEAT
 JPQDOSRI - DEMAND ELAST. * OTHER OILSEEDS WRT RICE
 JPQDOSSB - DEMAND ELAST. * OTHER OILSEEDS WRT SOYBEANS
 JPQDOSSM - DEMAND ELAST. * OTHER OILSEEDS WRT SOYMEAL
 JPQDOSSO - DEMAND ELAST. * OTHER OILSEEDS WRT SOYOIL
 JPQDOSWH - DEMAND ELAST. * OTHER OILSEEDS WRT WHEAT
 JPQDPEBF - DEMAND ELAST. * POULTRY-EGGS WRT BEEF+VEAL
 JPQDPECG - DEMAND ELAST. * POULTRY-EGGS WRT OTHER COARSE GRAINS
 JPQDPECN - DEMAND ELAST. * POULTRY-EGGS WRT CORN
 JPQDPEDB - DEMAND ELAST. * POULTRY-EGGS WRT DAIRY-BUTTER
 JPQDPEDC - DEMAND ELAST. * POULTRY-EGGS WRT DAIRY-CHEESE
 JPQDPEDM - DEMAND ELAST. * POULTRY-EGGS WRT DAIRY-MILK
 JPQDPEDO - DEMAND ELAST. * POULTRY-EGGS WRT DAIRY-OTHER PRODUCTS
 JPQDPEFI - DEMAND ELAST. * POULTRY-EGGS WRT FISH
 JPQDPEI - INTERCEPT OF DEMAND EQUATION * POULTRY-EGGS
 JPQDPEIN - DEMAND ELAST. * POULTRY-EGGS WRT INCOME
 JPQDPEML - DEMAND ELAST. * POULTRY-EGGS WRT MUTTON+LAMB
 JPQDPEOM - DEMAND ELAST. * POULTRY-EGGS WRT OTHER MEALS
 JPQDPEOO - DEMAND ELAST. * POULTRY-EGGS WRT OTHER OILS
 JPQDPEOS - DEMAND ELAST. * POULTRY-EGGS WRT OTHER OILSEEDS
 JPQDPEPE - DEMAND ELAST. * POULTRY-EGGS WRT POULTRY-EGGS
 JPQDPEPK - DEMAND ELAST. * POULTRY-EGGS WRT PORK
 JPQDPEPM - DEMAND ELAST. * POULTRY-EGGS WRT POULTRY-MEAT
 JPQDPERI - DEMAND ELAST. * POULTRY-EGGS WRT RICE
 JPQDPESB - DEMAND ELAST. * POULTRY-EGGS WRT SOYBEANS
 JPQDPESM - DEMAND ELAST. * POULTRY-EGGS WRT SOYMEAL
 JPQDPESO - DEMAND ELAST. * POULTRY-EGGS WRT SOYOIL
 JPQDPEWH - DEMAND ELAST. * POULTRY-EGGS WRT WHEAT
 JPQDPKBF - DEMAND ELAST. * PORK WRT BEEF+VEAL
 JPQDPKCG - DEMAND ELAST. * PORK WRT OTHER COARSE GRAINS
 JPQDPKCN - DEMAND ELAST. * PORK WRT CORN
 JPQDPKDB - DEMAND ELAST. * PORK WRT DAIRY-BUTTER
 JPQDPKDC - DEMAND ELAST. * PORK WRT DAIRY-CHEESE
 JPQDPKDM - DEMAND ELAST. * PORK WRT DAIRY-MILK
 JPQDPKDO - DEMAND ELAST. * PORK WRT DAIRY-OTHER PRODUCTS
 JPQDPKFI - DEMAND ELAST. * PORK WRT FISH
 JPQDPKI - INTERCEPT OF DEMAND EQUATION * PORK
 JPQDPKIN - DEMAND ELAST. * PORK WRT INCOME
 JPQDPKML - DEMAND ELAST. * PORK WRT MUTTON+LAMB

JPQDPKOM - DEMAND ELAST. * PORK WRT OTHER MEALS
 JPQDPKOO - DEMAND ELAST. * PORK WRT OTHER OILS
 JPQDPKOS - DEMAND ELAST. * PORK WRT OTHER OILSEEDS
 JPQDPKPE - DEMAND ELAST. * PORK WRT POULTRY-EGGS
 JPQDPKPK - DEMAND ELAST. * PORK WRT PORK
 JPQDPKPM - DEMAND ELAST. * PORK WRT POULTRY-MEAT
 JPQDPKRI - DEMAND ELAST. * PORK WRT RICE
 JPQDPKSB - DEMAND ELAST. * PORK WRT SOYBEANS
 JPQDPKSM - DEMAND ELAST. * PORK WRT SOYMEAL
 JPQDPKSO - DEMAND ELAST. * PORK WRT SOYOIL
 JPQDPKWH - DEMAND ELAST. * PORK WRT WHEAT
 JPQDPMBF - DEMAND ELAST. * POULTRY-MEAT WRT BEEF+VEAL
 JPQDPMCG - DEMAND ELAST. * POULTRY-MEAT WRT OTHER COARSE GRAINS
 JPQDPMCN - DEMAND ELAST. * POULTRY-MEAT WRT CORN
 JPQDPMDB - DEMAND ELAST. * POULTRY-MEAT WRT DAIRY-BUTTER
 JPQDPMDC - DEMAND ELAST. * POULTRY-MEAT WRT DAIRY-CHEESE
 JPQDPMDM - DEMAND ELAST. * POULTRY-MEAT WRT DAIRY-MILK
 JPQDPMDO - DEMAND ELAST. * POULTRY-MEAT WRT DAIRY-OTHER PRODUCTS
 JPQDPMFI - DEMAND ELAST. * POULTRY-MEAT WRT FISH
 JPQDPMI - INTERCEPT OF DEMAND EQUATION * POULTRY-MEAT
 JPQDPMIN - DEMAND ELAST. * POULTRY-MEAT WRT INCOME
 JPQDPMML - DEMAND ELAST. * POULTRY-MEAT WRT MUTTON+LAMB
 JPQDPMOM - DEMAND ELAST. * POULTRY-MEAT WRT OTHER MEALS
 JPQDPMOO - DEMAND ELAST. * POULTRY-MEAT WRT OTHER OILS
 JPQDPMOS - DEMAND ELAST. * POULTRY-MEAT WRT OTHER OILSEEDS
 JPQDPMPE - DEMAND ELAST. * POULTRY-MEAT WRT POULTRY-EGGS
 JPQDMPK - DEMAND ELAST. * POULTRY-MEAT WRT PORK
 JPQDMPM - DEMAND ELAST. * POULTRY-MEAT WRT POULTRY-MEAT
 JPQDPMRI - DEMAND ELAST. * POULTRY-MEAT WRT RICE
 JPQDMSB - DEMAND ELAST. * POULTRY-MEAT WRT SOYBEANS
 JPQDMSM - DEMAND ELAST. * POULTRY-MEAT WRT SOYMEAL
 JPQDMSO - DEMAND ELAST. * POULTRY-MEAT WRT SOYOIL
 JPQDPMWH - DEMAND ELAST. * POULTRY-MEAT WRT WHEAT
 JPQDRIBF - DEMAND ELAST. * RICE WRT BEEF+VEAL
 JPQDRICG - DEMAND ELAST. * RICE WRT OTHER COARSE GRAINS
 JPQDRICN - DEMAND ELAST. * RICE WRT CORN
 JPQDRIDB - DEMAND ELAST. * RICE WRT DAIRY-BUTTER
 JPQDRIDC - DEMAND ELAST. * RICE WRT DAIRY-CHEESE
 JPQDRIDM - DEMAND ELAST. * RICE WRT DAIRY-MILK
 JPQDRIDO - DEMAND ELAST. * RICE WRT DAIRY-OTHER PRODUCTS
 JPQDRIFI - DEMAND ELAST. * RICE WRT FISH
 JPQDRII - INTERCEPT OF DEMAND EQUATION * RICE
 JPQDRIIN - DEMAND ELAST. * RICE WRT INCOME
 JPQDRIML - DEMAND ELAST. * RICE WRT MUTTON+LAMB
 JPQDRIOM - DEMAND ELAST. * RICE WRT OTHER MEALS
 JPQDRIOO - DEMAND ELAST. * RICE WRT OTHER OILS
 JPQDRIOS - DEMAND ELAST. * RICE WRT OTHER OILSEEDS
 JPQDRIPE - DEMAND ELAST. * RICE WRT POULTRY-EGGS
 JPQDRIPK - DEMAND ELAST. * RICE WRT PORK
 JPQDRIPM - DEMAND ELAST. * RICE WRT POULTRY-MEAT
 JPQDRIRI - DEMAND ELAST. * RICE WRT RICE
 JPQDRISB - DEMAND ELAST. * RICE WRT SOYBEANS
 JPQDRISM - DEMAND ELAST. * RICE WRT SOYMEAL
 JPQDRISO - DEMAND ELAST. * RICE WRT SOYOIL
 JPQDRIWH - DEMAND ELAST. * RICE WRT WHEAT
 JPQDSBBF - DEMAND ELAST. * SOYBEANS WRT BEEF+VEAL

JPQDSBCG - DEMAND ELAST. * SOYBEANS WRT OTHER COARSE GRAINS
 JPQDSBCN - DEMAND ELAST. * SOYBEANS WRT CORN
 JPQDSBDB - DEMAND ELAST. * SOYBEANS WRT DAIRY-BUTTER
 JPQDSBDC - DEMAND ELAST. * SOYBEANS WRT DAIRY-CHEESE
 JPQDSBDM - DEMAND ELAST. * SOYBEANS WRT DAIRY-MILK
 JPQDSBDO - DEMAND ELAST. * SOYBEANS WRT DAIRY-OTHER PRODUCTS
 JPQDSBI - INTERCEPT OF DEMAND EQUATION * SOYBEANS
 JPQDSBIN - DEMAND ELAST. * SOYBEANS WRT INCOME
 JPQDSBML - DEMAND ELAST. * SOYBEANS WRT MUTTON+LAMB
 JPQDSBOM - DEMAND ELAST. * SOYBEANS WRT OTHER MEALS
 JPQDSBOO - DEMAND ELAST. * SOYBEANS WRT OTHER OILS
 JPQDSBOS - DEMAND ELAST. * SOYBEANS WRT OTHER OILSEEDS
 JPQDSBPE - DEMAND ELAST. * SOYBEANS WRT POULTRY-EGGS
 JPQDSBPK - DEMAND ELAST. * SOYBEANS WRT PORK
 JPQDSBPM - DEMAND ELAST. * SOYBEANS WRT POULTRY-MEAT
 JPQDSBRI - DEMAND ELAST. * SOYBEANS WRT RICE
 JPQDSBSB - DEMAND ELAST. * SOYBEANS WRT SOYBEANS
 JPQDSBSM - DEMAND ELAST. * SOYBEANS WRT SOYMEAL
 JPQDSBSO - DEMAND ELAST. * SOYBEANS WRT SOYOIL
 JPQDSBWH - DEMAND ELAST. * SOYBEANS WRT WHEAT
 JPQDSMBF - DEMAND ELAST. * SOYMEAL WRT BEEF+VEAL
 JPQDSMCG - DEMAND ELAST. * SOYMEAL WRT OTHER COARSE GRAINS
 JPQDSMCN - DEMAND ELAST. * SOYMEAL WRT CORN
 JPQDSMDB - DEMAND ELAST. * SOYMEAL WRT DAIRY-BUTTER
 JPQDSMDC - DEMAND ELAST. * SOYMEAL WRT DAIRY-CHEESE
 JPQDSMDM - DEMAND ELAST. * SOYMEAL WRT DAIRY-MILK
 JPQDSMDO - DEMAND ELAST. * SOYMEAL WRT DAIRY-OTHER PRODUCTS
 JPQDSMI - INTERCEPT OF DEMAND EQUATION * SOYMEAL
 JPQDSMIN - DEMAND ELAST. * SOYMEAL WRT INCOME
 JPQDSMML - DEMAND ELAST. * SOYMEAL WRT MUTTON+LAMB
 JPQDSMOM - DEMAND ELAST. * SOYMEAL WRT OTHER MEALS
 JPQDSMOO - DEMAND ELAST. * SOYMEAL WRT OTHER OILS
 JPQDSMOS - DEMAND ELAST. * SOYMEAL WRT OTHER OILSEEDS
 JPQDSMPE - DEMAND ELAST. * SOYMEAL WRT POULTRY-EGGS
 JPQDSMPK - DEMAND ELAST. * SOYMEAL WRT PORK
 JPQDSMPM - DEMAND ELAST. * SOYMEAL WRT POULTRY-MEAT
 JPQDSMRI - DEMAND ELAST. * SOYMEAL WRT RICE
 JPQDSMSB - DEMAND ELAST. * SOYMEAL WRT SOYBEANS
 JPQDSMSM - DEMAND ELAST. * SOYMEAL WRT SOYMEAL
 JPQDSMSO - DEMAND ELAST. * SOYMEAL WRT SOYOIL
 JPQDSMWH - DEMAND ELAST. * SOYMEAL WRT WHEAT
 JPQDSOBF - DEMAND ELAST. * SOYOIL WRT BEEF+VEAL
 JPQDSOCG - DEMAND ELAST. * SOYOIL WRT OTHER COARSE GRAINS
 JPQDSOCN - DEMAND ELAST. * SOYOIL WRT CORN
 JPQDSODB - DEMAND ELAST. * SOYOIL WRT DAIRY-BUTTER
 JPQDSODC - DEMAND ELAST. * SOYOIL WRT DAIRY-CHEESE
 JPQDSODM - DEMAND ELAST. * SOYOIL WRT DAIRY-MILK
 JPQDSODO - DEMAND ELAST. * SOYOIL WRT DAIRY-OTHER PRODUCTS
 JPQDSOI - INTERCEPT OF DEMAND EQUATION * SOYOIL
 JPQDSOIN - DEMAND ELAST. * SOYOIL WRT INCOME
 JPQDSOML - DEMAND ELAST. * SOYOIL WRT MUTTON+LAMB
 JPQDSOOM - DEMAND ELAST. * SOYOIL WRT OTHER MEALS
 JPQDSOOO - DEMAND ELAST. * SOYOIL WRT OTHER OILS
 JPQDSOOS - DEMAND ELAST. * SOYOIL WRT OTHER OILSEEDS
 JPQDSOPE - DEMAND ELAST. * SOYOIL WRT POULTRY-EGGS
 JPQDSOPK - DEMAND ELAST. * SOYOIL WRT PORK

JPQDSOPM - DEMAND ELAST. * SOYOIL WRT POULTRY-MEAT
 JPQDSORI - DEMAND ELAST. * SOYOIL WRT RICE
 JPQDSOSB - DEMAND ELAST. * SOYOIL WRT SOYBEANS
 JPQDSOSM - DEMAND ELAST. * SOYOIL WRT SOYMEAL
 JPQDSOSO - DEMAND ELAST. * SOYOIL WRT SOYOIL
 JPQDSOWH - DEMAND ELAST. * SOYOIL WRT WHEAT
 JPQDWHBF - DEMAND ELAST. * WHEAT WRT BEEF+VEAL
 JPQDWHCG - DEMAND ELAST. * WHEAT WRT OTHER COARSE GRAINS
 JPQDWHCN - DEMAND ELAST. * WHEAT WRT CORN
 JPQDWHDB - DEMAND ELAST. * WHEAT WRT DAIRY-BUTTER
 JPQDWHDC - DEMAND ELAST. * WHEAT WRT DAIRY-CHEESE
 JPQDWHDL - DEMAND ELAST. * WHEAT WRT DAIRY-MILK
 JPQDWHDO - DEMAND ELAST. * WHEAT WRT DAIRY-OTHER PRODUCTS
 JPQDWHI - INTERCEPT OF DEMAND EQUATION * WHEAT
 JPQDWHIN - DEMAND ELAST. * WHEAT WRT INCOME
 JPQDWHML - DEMAND ELAST. * WHEAT WRT MUTTON+LAMB
 JPQDWHOM - DEMAND ELAST. * WHEAT WRT OTHER MEALS
 JPQDWHOO - DEMAND ELAST. * WHEAT WRT OTHER OILS
 JPQDWHOS - DEMAND ELAST. * WHEAT WRT OTHER OILSEEDS
 JPQDWHPE - DEMAND ELAST. * WHEAT WRT POULTRY-EGGS
 JPQDWHPK - DEMAND ELAST. * WHEAT WRT PORK
 JPQDWHPM - DEMAND ELAST. * WHEAT WRT POULTRY-MEAT
 JPQDWHRI - DEMAND ELAST. * WHEAT WRT RICE
 JPQDWHSB - DEMAND ELAST. * WHEAT WRT SOYBEANS
 JPQDWHSM - DEMAND ELAST. * WHEAT WRT SOYMEAL
 JPQDWHSO - DEMAND ELAST. * WHEAT WRT SOYOIL
 JPQDWHWH - DEMAND ELAST. * WHEAT WRT WHEAT
 JPQFCGCG - FEED D.P. ELAS. * OTHER COARSE GRAINS WRT OTHER COARSE GRAINS
 JPQFCGCN - FEED D.P. ELAS. * OTHER COARSE GRAINS WRT CORN
 JPQFCGI - INTERCEPT OF FEED DEMAND EQUATION * OTHER COARSE GRAINS
 JPQFCGOM - FEED D.P. ELAS. * OTHER COARSE GRAINS WRT OTHER MEALS
 JPQFCGSM - FEED D.P. ELAS. * OTHER COARSE GRAINS WRT SOYMEAL
 JPQFCGWH - FEED D.P. ELAS. * OTHER COARSE GRAINS WRT WHEAT
 JPQFCNCG - FEED D.P. ELAS. * CORN WRT OTHER COARSE GRAINS
 JPQFCNCN - FEED D.P. ELAS. * CORN WRT CORN
 JPQFCNI - INTERCEPT OF FEED DEMAND EQUATION * CORN
 JPQFCNOM - FEED D.P. ELAS. * CORN WRT OTHER MEALS
 JPQFCNSM - FEED D.P. ELAS. * CORN WRT SOYMEAL
 JPQFCNWH - FEED D.P. ELAS. * CORN WRT WHEAT
 JPQFOMCG - FEED D.P. ELAS. * OTHER MEALS WRT OTHER COARSE GRAINS
 JPQFOMCN - FEED D.P. ELAS. * OTHER MEALS WRT CORN
 JPQFOMI - INTERCEPT OF FEED DEMAND EQUATION * OTHER MEALS
 JPQFOMOM - FEED D.P. ELAS. * OTHER MEALS WRT OTHER MEALS
 JPQFOMSM - FEED D.P. ELAS. * OTHER MEALS WRT SOYMEAL
 JPQFOMWH - FEED D.P. ELAS. * OTHER MEALS WRT WHEAT
 JPQFSMCG - FEED D.P. ELAS. * SOYMEAL WRT OTHER COARSE GRAINS
 JPQFSMCN - FEED D.P. ELAS. * SOYMEAL WRT CORN
 JPQFSMI - INTERCEPT OF FEED DEMAND EQUATION * SOYMEAL
 JPQFSMOM - FEED D.P. ELAS. * SOYMEAL WRT OTHER MEALS
 JPQFSMSM - FEED D.P. ELAS. * SOYMEAL WRT SOYMEAL
 JPQFSMWH - FEED D.P. ELAS. * SOYMEAL WRT WHEAT
 JPQFWHCG - FEED D.P. ELAS. * WHEAT WRT OTHER COARSE GRAINS
 JPQFWHCN - FEED D.P. ELAS. * WHEAT WRT CORN
 JPQFWHI - INTERCEPT OF FEED DEMAND EQUATION * WHEAT
 JPQFWHOM - FEED D.P. ELAS. * WHEAT WRT OTHER MEALS
 JPQFWHSM - FEED D.P. ELAS. * WHEAT WRT SOYMEAL

JPQFWHWH - FEED D.P. ELAS. * WHEAT WRT WHEAT
 JPQSBFI - INTERCEPT OF SUPPLY EQUATION * BEEF+VEAL
 JPQSBFPC - CUR. PRICE ELAST. SUPPLY * BEEF+VEAL
 JPQSBFPL - LAG. PRICE ELAST. SUPPLY * BEEF+VEAL
 JPQSBFTR - ANNUAL GROWTH RATE OF SUPPLY * BEEF+VEAL
 JPQSDDBD - PRICE ELAST. SUPPLY * DAIRY-BUTTER WRT DAIRY-BUTTER
 JPQSDDBC - PRICE ELAST. SUPPLY * DAIRY-BUTTER WRT DAIRY-CHEESE
 JPQSDBD0 - PRICE ELAST. SUPPLY * DAIRY-BUTTER WRT DAIRY-OTHER PRODUCTS
 JPQSDBI - INTERCEPT OF SUPPLY EQUATION * DAIRY-BUTTER
 JPQSDCDB - PRICE ELAST. SUPPLY * DAIRY-CHEESE WRT DAIRY-BUTTER
 JPQSDCDC - PRICE ELAST. SUPPLY * DAIRY-CHEESE WRT DAIRY-CHEESE
 JPQSDCDO - PRICE ELAST. SUPPLY * DAIRY-CHEESE WRT DAIRY-OTHER PRODUCTS
 JPQSDCI - INTERCEPT OF SUPPLY EQUATION * DAIRY-CHEESE
 JPQSDMI - INTERCEPT OF SUPPLY EQUATION * DAIRY-MILK
 JPQSDMPC - CUR. PRICE ELAST. SUPPLY * DAIRY-MILK
 JPQSDMPL - LAG. PRICE ELAST. SUPPLY * DAIRY-MILK
 JPQSDMTR - ANNUAL GROWTH RATE OF SUPPLY * DAIRY-MILK
 JPQSDODB - PRICE ELAST. SUPPLY * DAIRY-OTHER PRODUCTS WRT DAIRY-BUTTER
 JPQSDODC - PRICE ELAST. SUPPLY * DAIRY-OTHER PRODUCTS WRT DAIRY-CHEESE
 JPQSDODO - PRICE ELAST. SUPPLY * DAIRY-OTHER PRODUCTS WRT DAIRY-OTHER PROD
 JPQSDOI - INTERCEPT OF SUPPLY EQUATION * DAIRY-OTHER PRODUCTS
 JPQSMLI - INTERCEPT OF SUPPLY EQUATION * MUTTON+LAMB
 JPQSM LPC - CUR. PRICE ELAST. SUPPLY * MUTTON+LAMB
 JPQSMPL - LAG. PRICE ELAST. SUPPLY * MUTTON+LAMB
 JPQSMLTR - ANNUAL GROWTH RATE OF SUPPLY * MUTTON+LAMB
 JPQSPEI - INTERCEPT OF SUPPLY EQUATION * POULTRY-EGGS
 JPQSPEPC - CUR. PRICE ELAST. SUPPLY * POULTRY-EGGS
 JPQSPEPL - LAG. PRICE ELAST. SUPPLY * POULTRY-EGGS
 JPQSPETR - ANNUAL GROWTH RATE OF SUPPLY * POULTRY-EGGS
 JPQSPKI - INTERCEPT OF SUPPLY EQUATION * PORK
 JPQSPKPC - CUR. PRICE ELAST. SUPPLY * PORK
 JPQSPKPL - LAG. PRICE ELAST. SUPPLY * PORK
 JPQSPKTR - ANNUAL GROWTH RATE OF SUPPLY * PORK
 JPQSPMI - INTERCEPT OF SUPPLY EQUATION * POULTRY-MEAT
 JPQSPMPC - CUR. PRICE ELAST. SUPPLY * POULTRY-MEAT
 JPQSPMPL - LAG. PRICE ELAST. SUPPLY * POULTRY-MEAT
 JPQSPMTR - ANNUAL GROWTH RATE OF SUPPLY * POULTRY-MEAT
 JPSERII - INTERCEPT OF EXPORT SUBSIDY EQUATION * RICE
 JPSEIRI - SUBSIDY (EXPORT) ELAST. * RICE WRT RICE
 JPSEIRISK - SUBSIDY (EXPORT) ELAST. * RICE WRT STOCK
 JPSEIRITR - SUBSIDY (EXPORT) ELAST. * RICE WRT TIME TREND
 JP SKBFBF - STOCK ELASTICITY * BEEF+VEAL WRT BEEF+VEAL
 JP SKBFI - INTERCEPT OF STOCK EQUATION * BEEF+VEAL
 JP SKCGCG - STOCK ELASTICITY * OTHER COARSE GRAIN WRT OTHER COARSE GRAIN
 JP SKCGI - INTERCEPT OF STOCK EQUATION * OTHER COARSE GRAIN
 JP SKCNCN - STOCK ELASTICITY * CORN WRT CORN
 JP SKCNI - INTERCEPT OF STOCK EQUATION * CORN
 JP SKDBDB - STOCK ELASTICITY * DAIRY-BUTTER WRT DAIRY-BUTTER
 JP SKDBI - INTERCEPT OF STOCK EQUATION * DAIRY-BUTTER
 JP SKDCDC - STOCK ELASTICITY * DAIRY-CHEESE WRT DAIRY-CHEESE
 JP SKDCI - INTERCEPT OF STOCK EQUATION * DAIRY-CHEESE
 JP SKDODO - STOCK ELASTICITY * DAIRY-OTHER PRODUCTS WRT DAIRY-OTHER PRODUCT
 JP SKDOI - INTERCEPT OF STOCK EQUATION * DAIRY-OTHER PRODUCTS
 JP SKMLI - INTERCEPT OF STOCK EQUATION * MUTTON+LAMB
 JP SKMLML - STOCK ELASTICITY * MUTTON+LAMB WRT MUTTON+LAMB
 JP SKOMI - INTERCEPT OF STOCK EQUATION * OTHER MEALS
 JP SKOMOM - STOCK ELASTICITY * OTHER MEALS WRT OTHER MEALS

JPSK00I - INTERCEPT OF STOCK EQUATION * OTHER OILS
JPSK0000 - STOCK ELASTICITY * OTHER OILS WRT OTHER OILS
JPSKOSI - INTERCEPT OF STOCK EQUATION * OTHER OILSEEDS
JPSKOSOS - STOCK ELASTICITY * OTHER OILSEEDS WRT OTHER OILSEEDS
JPSKPEI - INTERCEPT OF STOCK EQUATION * POULTRY-EGGS
JPSKPEPE - STOCK ELASTICITY * POULTRY-EGGS WRT POULTRY-EGGS
JPSKPKI - INTERCEPT OF STOCK EQUATION * PORK
JPSKPKPK - STOCK ELASTICITY * PORK WRT PORK
JPSKPMI - INTERCEPT OF STOCK EQUATION * POULTRY-MEAT
JPSKMPM - STOCK ELASTICITY * POULTRY-MEAT WRT POULTRY-MEAT
JPSKRII - INTERCEPT OF STOCK EQUATION * RICE
JPSKRIRI - STOCK ELASTICITY * RICE WRT RICE
JPSKSBI - INTERCEPT OF STOCK EQUATION * SOYBEANS
JPSKSBSB - STOCK ELASTICITY * SOYBEANS WRT SOYBEANS
JPSKSMI - INTERCEPT OF STOCK EQUATION * SOYMEAL
JPSKSMSM - STOCK ELASTICITY * SOYMEAL WRT SOYMEAL
JPSKSOI - INTERCEPT OF STOCK EQUATION * SOYOIL
JPSKSOSO - STOCK ELASTICITY * SOYOIL WRT SOYOIL
JPSKWHI - INTERCEPT OF STOCK EQUATION * WHEAT
JPSKWHWH - STOCK ELASTICITY * WHEAT WRT WHEAT
JPSPCGCG - SUBSIDY (PROD.) ELAST. * OTHER C. GRAINS WRT OTHER C. GRAINS
JPSPCGI - INTERCEPT OF PROD. SUBSIDY EQUATION * OTHER C. GRAINS
JPSPCGRI - SUBSIDY (PROD.) ELAST. * OTHER C. GRAINS WRT RICE
JPSPCGSK - SUBSIDY (PROD.) ELAST. * OTHER C. GRAINS WRT STOCK
JPSPCGTR - SUBSIDY (PROD.) ELAST. * OTHER C. GRAINS WRT TIME TREND
JPSPRII - INTERCEPT OF PROD. SUBSIDY EQUATION * RICE
JPSPRIRI - SUBSIDY (PROD.) ELAST. * RICE WRT RICE
JPSPRISK - SUBSIDY (PROD.) ELAST. * RICE WRT STOCK
JPSPRITR - SUBSIDY (PROD.) ELAST. * RICE WRT TIME TREND
JPSPWHI - INTERCEPT OF PROD. SUBSIDY EQUATION * WHEAT
JPSPWHRI - SUBSIDY (PROD.) ELAST. * WHEAT WRT RICE
JPSPWHSK - SUBSIDY (PROD.) ELAST. * WHEAT WRT STOCK
JPSPWHWH - SUBSIDY (PROD.) ELAST. * WHEAT WRT WHEAT
JPSPWHTR - SUBSIDY (PROD.) ELAST. * WHEAT WRT TIME TREND
JPYDCGAR - YIELD AREA ELAST. * OTHER COARSE GRAINS
JPYDCGCG - YIELD PRICE ELAST. * OTHER COARSE GRAINS
JPYDCGI - INTERCEPT OF CROP YIELD EQUATION * OTHER COARSE GRAINS
JPYDCGTR - YIELD ANNUAL GROWTH RATE * OTHER COARSE GRAINS
JPYDCNAR - YIELD AREA ELAST. * CORN
JPYDCNCN - YIELD PRICE ELAST. * CORN
JPYDCNI - INTERCEPT OF CROP YIELD EQUATION * CORN
JPYDCNTR - YIELD ANNUAL GROWTH RATE * CORN
JPYDOSAR - YIELD AREA ELAST. * OTHER OILSEEDS
JPYDOSI - INTERCEPT OF CROP YIELD EQUATION * OTHER OILSEEDS
JPYDOSOS - YIELD PRICE ELAST. * OTHER OILSEEDS
JPYDOSTR - YIELD ANNUAL GROWTH RATE * OTHER OILSEEDS
JPYDRIAR - YIELD AREA ELAST. * RICE
JPYDRII - INTERCEPT OF CROP YIELD EQUATION * RICE
JPYDRIRI - YIELD PRICE ELAST. * RICE
JPYDRITR - YIELD ANNUAL GROWTH RATE * RICE
JPYDSBAR - YIELD AREA ELAST. * SOYBEANS
JPYDSBI - INTERCEPT OF CROP YIELD EQUATION * SOYBEANS
JPYDSBSB - YIELD PRICE ELAST. * SOYBEANS
JPYDSBTR - YIELD ANNUAL GROWTH RATE * SOYBEANS
JPYDWHAR - YIELD AREA ELAST. * WHEAT
JPYDWHI - INTERCEPT OF CROP YIELD EQUATION * WHEAT
JPYDWHTR - YIELD ANNUAL GROWTH RATE * WHEAT
JPYDWHWH - YIELD PRICE ELAST. * WHEAT

PARAMETER:

JPCLBF - CONVERGENCE LIMIT * BEEF+VEAL
 JPCLCG - CONVERGENCE LIMIT * OTHER COARSE GRAINS
 JPCLCN - CONVERGENCE LIMIT * CORN
 JPCLDB - CONVERGENCE LIMIT * DAIRY-BUTTER
 JPCLDC - CONVERGENCE LIMIT * DAIRY-CHEESE
 JPCLDO - CONVERGENCE LIMIT * DAIRY-OTHER PRODUCTS
 JPCLML - CONVERGENCE LIMIT * MUTTON+LAMB
 JPCLOM - CONVERGENCE LIMIT * OTHER MEALS
 JPCLOO - CONVERGENCE LIMIT * OTHER OILS
 JPCLOS - CONVERGENCE LIMIT * OTHER OILSEEDS
 JPCLPE - CONVERGENCE LIMIT * POULTRY-EGGS
 JPCLPK - CONVERGENCE LIMIT * PORK
 JPCLPM - CONVERGENCE LIMIT * POULTRY-MEAT
 JPCLRI - CONVERGENCE LIMIT * RICE
 JPCLSB - CONVERGENCE LIMIT * SOYBEANS
 JPCLSM - CONVERGENCE LIMIT * SOYMEAL
 JPCLSO - CONVERGENCE LIMIT * SOYOIL
 JPCLWH - CONVERGENCE LIMIT * WHEAT
 JPCPBF - CONVERGENCE PARAMETER * BEEF+VEAL
 JPCPCG - CONVERGENCE PARAMETER * OTHER COARSE GRAINS
 JPCPCN - CONVERGENCE PARAMETER * CORN
 JPCPDB - CONVERGENCE PARAMETER * DAIRY-BUTTER
 JPCPDC - CONVERGENCE PARAMETER * DAIRY-CHEESE
 JPCPDO - CONVERGENCE PARAMETER * DAIRY-OTHER PRODUCTS
 JPCPML - CONVERGENCE PARAMETER * MUTTON+LAMB
 JPCPOM - CONVERGENCE PARAMETER * OTHER MEALS
 JPCPOO - CONVERGENCE PARAMETER * OTHER OILS
 JPCPOS - CONVERGENCE PARAMETER * OTHER OILSEEDS
 JPCPPE - CONVERGENCE PARAMETER * POULTRY-EGGS
 JPCPPK - CONVERGENCE PARAMETER * PORK
 JPCPPM - CONVERGENCE PARAMETER * POULTRY-MEAT
 JPCPRI - CONVERGENCE PARAMETER * RICE
 JPCPSB - CONVERGENCE PARAMETER * SOYBEANS
 JPCPSM - CONVERGENCE PARAMETER * SOYMEAL
 JPCPSO - CONVERGENCE PARAMETER * SOYOIL
 JPCPWH - CONVERGENCE PARAMETER * WHEAT
 JPFCBFCG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR BEEF+VEAL
 JPFCBFCN - FEED COST WEIGHT * CORN FOR BEEF+VEAL
 JPFCBFOM - FEED COST WEIGHT * OTHER MEALS FOR BEEF+VEAL
 JPFCBFSM - FEED COST WEIGHT * SOYMEAL FOR BEEF+VEAL
 JPFCBFWH - FEED COST WEIGHT * WHEAT FOR BEEF+VEAL
 JPFCDMCG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR DAIRY-MILK
 JPFCDMCN - FEED COST WEIGHT * CORN FOR DAIRY-MILK
 JPFCDMOM - FEED COST WEIGHT * OTHER MEALS FOR DAIRY-MILK
 JPFCDMSM - FEED COST WEIGHT * SOYMEAL FOR DAIRY-MILK
 JPFCDMWH - FEED COST WEIGHT * WHEAT FOR DAIRY-MILK
 JPFCMLCG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR MUTTON+LAMB
 JPFCMLCN - FEED COST WEIGHT * CORN FOR MUTTON+LAMB
 JPFCMLOM - FEED COST WEIGHT * OTHER MEALS FOR MUTTON+LAMB
 JPFCMLSM - FEED COST WEIGHT * SOYMEAL FOR MUTTON+LAMB
 JPFCMLWH - FEED COST WEIGHT * WHEAT FOR MUTTON+LAMB
 JPFCPECG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR POULTRY-EGGS
 JPFCPECN - FEED COST WEIGHT * CORN FOR POULTRY-EGGS
 JPFCPEOM - FEED COST WEIGHT * OTHER MEALS FOR POULTRY-EGGS
 JPFCPESM - FEED COST WEIGHT * SOYMEAL FOR POULTRY-EGGS
 JPFCPEWH - FEED COST WEIGHT * WHEAT FOR POULTRY-EGGS

JPFCPKCG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR PORK
 JPFCPKCN - FEED COST WEIGHT * CORN FOR PORK
 JPFCPKOM - FEED COST WEIGHT * OTHER MEALS FOR PORK
 JPFCPKSM - FEED COST WEIGHT * SOYMEAL FOR PORK
 JPFCPKWH - FEED COST WEIGHT * WHEAT FOR PORK
 JPFCPMCG - FEED COST WEIGHT * OTHER COARSE GRAINS FOR POULTRY-MEAT
 JPFCPMCN - FEED COST WEIGHT * CORN FOR POULTRY-MEAT
 JPFCPMOM - FEED COST WEIGHT * OTHER MEALS FOR POULTRY-MEAT
 JPFCPMSM - FEED COST WEIGHT * SOYMEAL FOR POULTRY-MEAT
 JPFCPMWH - FEED COST WEIGHT * WHEAT FOR POULTRY-MEAT
 JPGCAUBF - WEIGHT FOR GRAIN CONSUMING ANIMAL UNIT * BEEF+VEAL
 JPGCAUDM - WEIGHT FOR GRAIN CONSUMING ANIMAL UNIT * DAIRY-MILK
 JPGCAUML - WEIGHT FOR GRAIN CONSUMING ANIMAL UNIT * MUTTON+LAMB
 JPGCAUPE - WEIGHT FOR GRAIN CONSUMING ANIMAL UNIT * POULTRY-EGGS
 JPGCAUPK - WEIGHT FOR GRAIN CONSUMING ANIMAL UNIT * PORK
 JPGCMUPM - WEIGHT FOR GRAIN CONSUMING ANIMAL MEAT UNIT * POULTRY-MEAT
 JPLPWTBF - LIVESTOCK PRICE INDEX WEIGHT * BEEF+VEAL
 JPLPWTDM - LIVESTOCK PRICE INDEX WEIGHT * DAIRY-MILK
 JPLPWTML - LIVESTOCK PRICE INDEX WEIGHT * MUTTON+LAMB
 JPLPWTPE - LIVESTOCK PRICE INDEX WEIGHT * POULTRY-EGGS
 JPLPWTPK - LIVESTOCK PRICE INDEX WEIGHT * PORK
 JPLPWTPM - LIVESTOCK PRICE INDEX WEIGHT * POULTRY-MEAT
 JPQSOSOM - SHARE OF OTHER OILSEED WEIGHT GOING TO MEAL
 JPQSOSOO - SHARE OF OTHER OILSEED WEIGHT GOING TO OIL
 JPQSSBSM - SHARE OF SOYBEAN WEIGHT GOING TO MEAL
 JPQSSBSO - SHARE OF SOYBEAN WEIGHT GOING TO OIL

EQUATIONS

 * GRAIN, OILSEEDS, LIVESTOCK COUNTRY MODEL - JAPAN (JP) *
 *

 * DOMESTIC MARGIN EQUATIONS *
 *

MARGIN (DOMESTIC) - BEEF+VEAL:
 1:JPMDBF $JPMDBF'N = JPMDBF'I'C*(JPPNG'X/JPPDBF'N)**JPMDBFPC'C*(JPPNG'X(-1)/JPPDBF'N(-1))**JPMDBFPL'C*JPPDBF'N$

MARGIN (DOMESTIC) - PORK:
 2:JPMDPK $JPMDPK'N = JPMDPKI'C*(JPPNG'X/JPPDPK'N)**JPMDPKPC'C*(JPPNG'X(-1)/JPPDPK'N(-1))**JPMDPKPL'C*JPPDPK'N$

MARGIN (DOMESTIC) - DAIRY-MILK:
 3:JPMDDM $JPMDDM'N = JPMDDMI'C*(JPPNG'X/JPPDDM'N)**JPMDDMPC'C*(JPPNG'X(-1)/JPPDDM'N(-1))**JPMDDMPL'C*JPPDDM'N$

MARGIN (DOMESTIC) - POULTRY-MEAT:
 4:JPMDDM $JPMDDM'N = JPMDDMI'C*(JPPNG'X/JPPDDM'N)**JPMDDMPC'C*(JPPNG'X(-1)/JPPDDM'N(-1))**JPMDDMPL'C*JPPDDM'N$

MARGIN (DOMESTIC) - POULTRY-EGGS:

5:JPM DPE JPM DPE'N = JPM DPEI'C*(JPPNG'X/JPPDPE'N)**JPM DPEPC'C*(JPPNG'X(-1)/
JPPDPE'N(-1))**JPM DPEPL'C*JPPDPE'N

MARGIN (DOMESTIC) - DAIRY-BUTTER:

6:JPM DDB JPM DDB'N = JPM DDBI'C*(JPPNG'X/JPPDDB'N)**JPM DDBPC'C*(JPPNG'X(-1)/
JPPDDB'N(-1))**JPM DDBPL'C*JPPDDB'N

MARGIN (DOMESTIC) - DAIRY-OTHER PRODUCTS:

7:JPM DDO JPM DDO'N = JPM DDOI'C*(JPPNG'X/JPPDDO'N)**JPM DDOPC'C*(JPPNG'X(-1)/
JPPDDO'N(-1))**JPM DDOPL'C*JPPDDO'N

* TRADE MARGIN EQUATIONS *
* *

MARGIN (TRADE) - BEEF+VEAL:

8:JPM TBF JPM TBF'N = JPM TBFI'C*(JPPNG'X/JPPDBF'N)**JPM TBFPC'C*(JPPNG'X(-1)/
JPPDBF'N(-1))**JPM TBFPL'C*JPPDBF'N

MARGIN (TRADE) - PORK:

9:JPM TPK JPM TPK'N = JPM TPKI'C*(JPPNG'X/JPPDPK'N)**JPM TPKPC'C*(JPPNG'X(-1)/
JPPDPK'N(-1))**JPM TPKPL'C*JPPDPK'N

MARGIN (TRADE) - POULTRY-MEAT:

10:JPM TPM JPM TPM'N = JPM TPMI'C*(JPPNG'X/JPPDPM'N)**JPM TPMPC'C*(JPPNG'X(-1)/
JPPDPM'N(-1))**JPM TPMPL'C*JPPDPM'N

MARGIN (TRADE) - POULTRY-EGGS:

11:JPM TPE JPM TPE'N = JPM TPEI'C*(JPPNG'X/JPPDPE'N)**JPM TPEPC'C*(JPPNG'X(-1)/
JPPDPE'N(-1))**JPM TPEPL'C*JPPDPE'N

MARGIN (TRADE) - WHEAT:

12:JPM TWH JPM TWH'N = JPM TWHI'C*(JPPNG'X/JPPDWH'N)**JPM TWHPC'C*(JPPNG'X(-1)/
JPPDWH'N(-1))**JPM TWHPL'C*JPPDWH'N

MARGIN (TRADE) - OTHER COARSE GRAINS:

13:JPM TCG JPM TCG'N = JPM TCGI'C*(JPPNG'X/JPPDCG'N)**JPM TCGPC'C*(JPPNG'X(-1)/
JPPDCG'N(-1))**JPM TCGPL'C*JPPDCG'N

MARGIN (TRADE) - SOYBEANS:

14:JPM TSB JPM TSB'N = JPM TSB I'C*(JPPNG'X/JPPDSB'N)**JPM TSBPC'C*(JPPNG'X(-1)/
JPPDSB'N(-1))**JPM TSBPL'C*JPPDSB'N

MARGIN (TRADE) - SOYMEAL:

15:JPM TSM JPM TSM'N = JPM TSMI'C*(JPPNG'X/JPPDSM'N)**JPM TSMPC'C*(JPPNG'X(-1)/
JPPDSM'N(-1))**JPM TSMPL'C*JPPDSM'N

MARGIN (TRADE) - SOYOIL:

16:JPM TSO JPM TSO'N = JPM TSOI'C*(JPPNG'X/JPPDSO'N)**JPM TSOPC'C*(JPPNG'X(-1)/
JPPDSO'N(-1))**JPM TSOPL'C*JPPDSO'N

MARGIN (TRADE) - OTHER MEALS:

17:JPM TOM JPM TOM'N = JPM TOMI'C*(JPPNG'X/JPPDOM'N)**JPM TOMPC'C*(JPPNG'X(-1)/
JPPDOM'N(-1))**JPM TOMPL'C*JPPDOM'N

MARGIN (TRADE) - DAIRY-BUTTER:
18:JPMTDB JPMTDB'N = JPMTDBI'C*(JPPNG'X/JPPDDB'N)**JPMTDBPC'C*(JPPNG'X(-1)/
JPPDDB'N(-1))**JPMTDBPL'C*JPPDDB'N

MARGIN (TRADE) - DAIRY-CHEESE:
19:JPMTDC JPMTDC'N = JPMTDCI'C*(JPPNG'X/JPPDDC'N)**JPMTDCPC'C*(JPPNG'X(-1)/
JPPDDC'N(-1))**JPMTDCPL'C*JPPDDC'N

MARGIN (TRADE) - DAIRY-OTHER PRODUCTS:
20:JPMTDO JPMTDO'N = JPMTDOI'C*(JPPNG'X/JPPDDO'N)**JPMTDOPC'C*(JPPNG'X(-1)/
JPPDDO'N(-1))**JPMTDOPL'C*JPPDDO'N

SUBSIDY (PRODUCTION) - WHEAT:
21:JPSPWH JPSPWH = JPSPWHI'C*JPSKRI'N(-1)**JPSPWHSK'C*JPSPRI(-1)**JPSPWHRI'C
*JPSPWH(-1)**JPSPWHWH'C*TIME'X**JPSPWHTR'C

SUBSIDY (PRODUCTION) - OTHER COARSE GRAINS:
22:JPSPCG JPSPCG = JPSPCGI'C*JPSKRI'N(-1)**JPSPCGSK'C*JPSPRI(-1)**JPSPCGRI'C
*JPSPCG(-1)**JPSPCGCG'C*TIME'X**JPSPCGTR'C

SUBSIDY (PRODUCTION) - RICE:
23:JPSPRI JPSPRI = JPSPRII'C*JPSKRI'N(-1)**JPSPRISK'C*JPSPRI(-1)**JPSPRIRI'C
*TIME'X**JPSPRITR'C

SUBSIDY (EXPORT) - RICE:
24:JPSERI JPSERI = JPSERII'C*JPSKRI'N(-1)**JPSEIRISK'C*JPSERI(-1)**JPSEIRIRI'C
*TIME'X**JPSEIRITR'C

TAX/SUBSIDY (PRODUCTION) - WHEAT:
25:JPTPWH JPTPWH = -JPSPWH

TAX/SUBSIDY (PRODUCTION) - OTHER COARSE GRAINS:
26:JPTPCG JPTPCG = -JPSPCG

TAX/SUBSIDY (PRODUCTION) - RICE:
27:JPTPRI JPTPRI = -JPSPRI

TAX/SUBSIDY (EXPORT) - RICE:
28:JPTERI JPTERI = -JPSERI

* SUPPLY - DEMAND PRICE LINKAGE EQUATIONS *

PRICE (SUPPLY) DEFINITION - BEEF+VEAL:
29:JPPSBF JPPSBF'DEF == ABSV'F(JPPDBF'N-JPTCBF'POLN-JPMDBF'N-JPTPBF'POLN)

PRICE (SUPPLY) DEFINITION - PORK:
30:JPPSPK JPPSPK'DEF == ABSV'F(JPPDPK'N-JPTCPK'POLN-JPMDPK'N-JPTPPK'POLN)

PRICE (SUPPLY) DEFINITION - MUTTON+LAMB:
31:JPPSML JPPSML'DEF == ABSV'F(JPPDML'N-JPTCML'POLN-JPMDML'N-JPTPML'POLN)

PRICE (SUPPLY) DEFINITION - DAIRY-MILK:
32:JPPSDM JPPSDM'DEF == ABSV'F(JPPDDM'N-JPTCDM'POLN-JPMDDM'N-JPTPDM'POLN)

PRICE (SUPPLY) DEFINITION - POULTRY-MEAT:
33:JPPSPM JPPSPM'DEF == ABSV'F(JPPDPM'N-JPTCPM'POLN-JPMDPM'N-JPTPPM'POLN)

PRICE (SUPPLY) DEFINITION - POULTRY-EGGS:
34:JPPSPE JPPSPE'DEF == ABSV'F(JPPDPE'N-JPTCPE'POLN-JPMDPE'N-JPTPPE'POLN)

PRICE (SUPPLY) DEFINITION - WHEAT:
35:JPPSWH JPPSWH'DEF == ABSV'F(JPPDWH'N-JPTCWH'POLN-JPMDWH-JPTPWH)

PRICE (SUPPLY) DEFINITION - CORN:
36:JPPSCN JPPSCN'DEF == ABSV'F(JPPDCN'N-JPTCCN'POLN-JPMDCN-JPTPCN'POLN)

PRICE (SUPPLY) DEFINITION - OTHER COARSE GRAINS:
37:JPPSCG JPPSCG'DEF == ABSV'F(JPPDCG'N-JPTCCG'POLN-JPMDCG-JPTPCG)

PRICE (SUPPLY) DEFINITION - RICE:
38:JPPSRI JPPSRI'DEF == ABSV'F(JPPDRI'N-JPTCRI'POLN-JPMDRI-JPTPRI)

PRICE (SUPPLY) DEFINITION - SOYBEANS:
39:JPPSSB JPPSSB'DEF == ABSV'F(JPPDSB'N-JPTCSB'POLN-JPMDSB-JPTPSB'POLN)

PRICE (SUPPLY) DEFINITION - OTHER OILSEEDS:
40:JPPSOS JPPSOS'DEF == ABSV'F(JPPDOS'N-JPTCOS'POLN-JPMDOS-JPTPOS'POLN)

PRICE (SUPPLY) DEFINITION - SOYMEAL:
41:JPPSSM JPPSSM'DEF == ABSV'F(JPPDSM'N-JPTCSM'POLN-JPMDSM-JPTPSM'POLN)

PRICE (SUPPLY) DEFINITION - SOYOIL:
42:JPPSSO JPPSSO'DEF == ABSV'F(JPPDSO'N-JPTCSO'POLN-JPMDSO-JPTPSO'POLN)

PRICE (SUPPLY) DEFINITION - OTHER MEALS:
43:JPPSOM JPPSOM'DEF == ABSV'F(JPPDOM'N-JPTCOM'POLN-JPMDOM-JPTPOM'POLN)

PRICE (SUPPLY) DEFINITION - OTHER OILS:
44:JPPSOO JPPSOO'DEF == ABSV'F(JPPDOO'N-JPTCOO'POLN-JPMDOO-JPTPOO'POLN)

PRICE (SUPPLY) DEFINITION - DAIRY-BUTTER:
45:JPPSDB JPPSDB'DEF == ABSV'F(JPPDDB'N-JPTCDB'POLN-JPMddb'N-JPTPDB'POLN)

PRICE (SUPPLY) DEFINITION - DAIRY-CHEESE:
46:JPPSDC JPPSDC'DEF == ABSV'F(JPPDDC'N-JPTCDC'POLN-JPMDDC-JPTPDC'POLN)

PRICE (SUPPLY) DEFINITION - DAIRY-OTHER PRODUCTS:
47:JPPSDO JPPSDO'DEF == ABSV'F(JPPDDO'N-JPTCDO'POLN-JPMDDO'N-JPTPDO'POLN)

* CROP AREA EQUATIONS *
* *

AVERAGE REAL RETURN TO LAND (1976 PRICES):
48:JPTTRL JPTTRL'DEF == (JPPSWH'DEF*JPYDWH'N*JPARWH'N+JPPSCN'DEF*JPYDCN'N*
JPARN'N+JPPSCG'DEF*JPYDCG'N*JPARGC'N+JPPSRI'DEF*JPYDRI'N*JPARRI'N
+JPPSSB'DEF*JPYDSB'N*JPARSB'N+JPPSOS'DEF*JPYDOS'N*JPAROS'N)*100/(
JPICP'X*(JPARWH'N+JPARN'N+JPARGC'N+JPARRI'N+JPARSB'N+JPAROS'N))

TOTAL LAND SUPPLY:

49:JPARTT JPARTT'N = JPARTTI'C*JPTRL'DEF(-1)**JPARTTRL'C*(1+JPARTTTR'C)**
TIME'X

CROP AREA SUPPLY - WHEAT:

50:JPARWH JPARWH'N = JPARWHI'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPARWHWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPARWHCN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPARWHCG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPARWHRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPARWHSB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPARWHOS'C*JPARTT'N

CROP AREA SUPPLY - CORN:

51:JPARN JPARCN'N = JPARCNI'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPARNWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPARNCN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPARNCG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPARNRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPARNSB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPARNOS'C*JPARTT'N

CROP AREA SUPPLY - OTHER COARSE GRAINS:

52:JPARG JPARCG'N = JPARCGI'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPARGWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPARGCN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPARGCG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPARGRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPARGSB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPARGOS'C*JPARTT'N

CROP AREA SUPPLY - RICE:

53:JPARRI JPARRI'N = JPARRII'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPARRIWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPARRICN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPARRICG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPARRIRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPARRISB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPARRIOS'C*JPARTT'N

CROP AREA SUPPLY - SOYBEANS:

54:JPARSB JPARSB'N = JPARSBI'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPARSBWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPARSBCN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPARSBCG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPARSBRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPARSBSB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPARSBOS'C*JPARTT'N

CROP AREA SUPPLY - OTHER OILSEEDS:

55:JPAROS JPAROS'N = JPAROSI'C*(JPPSWH'DEF(-1)*JPYDWH'N(-1)/JPICP'X(-1))**
JPAROSWH'C*(JPPSCN'DEF(-1)*JPYDCN'N(-1)/JPICP'X(-1))**JPAROSCN'C*(
JPPSCG'DEF(-1)*JPYDCG'N(-1)/JPICP'X(-1))**JPAROSCG'C*(JPPSRI'DEF(
-1)*JPYDRI'N(-1)/JPICP'X(-1))**JPAROSRI'C*(JPPSSB'DEF(-1)*JPYDSB'N
(-1)/JPICP'X(-1))**JPAROSSB'C*(JPPSOS'DEF(-1)*JPYDOS'N(-1)/JPICP'X
(-1))**JPAROSOS'C*JPARTT'N

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*****
*      CROP YIELD EQUATIONS                                     *
*                                                                 *
*****
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YIELD - WHEAT:

56:JPYDWH JPYDWH'N = JPYDWHI'C*(JPPSWH'DEF/JPPIN'X)**JPYDWHWH'C*JPARWH'N**
JPYDWHAR'C*(1+JPYDWHTR'C)**TIME'X*JPWIN'X

YIELD - CORN:

57:JPYDCN JPYDCN'N = JPYDCNI'C*(JPPSCN'DEF/JPPIN'X)**JPYDCNCN'C*JPARN'N**
JPYDCNAR'C*(1+JPYDCNTR'C)**TIME'X*JPWIN'X

YIELD - OTHER COARSE GRAINS:

58:JPYDCG JPYDCG'N = JPYDCGI'C*(JPPSCG'DEF/JPPIN'X)**JPYDCGCG'C*JPARG'N**
JPYDCGAR'C*(1+JPYDCGTR'C)**TIME'X*JPWIN'X

YIELD - RICE:

59:JPYDRI JPYDRI'N = JPYDRII'C*(JPPSRI'DEF/JPPIN'X)**JPYDRIRI'C*JPARRI'N**
JPYDRIAR'C*(1+JPYDRITR'C)**TIME'X*JPWIN'X

YIELD - SOYBEANS:

60:JPYDSB JPYDSB'N = JPYDSBI'C*(JPPSSB'DEF/JPPIN'X)**JPYDSBSB'C*JPARSB'N**
JPYDSBAR'C*(1+JPYDSBTR'C)**TIME'X*JPWIN'X

YIELD - OTHER OILSEEDS:

61:JPYDOS JPYDOS'N = JPYDOSI'C*(JPPSOS'DEF/JPPIN'X)**JPYDOSOS'C*JPAROS'N**
JPYDOSAR'C*(1+JPYDOSTR'C)**TIME'X*JPWIN'X

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*****
*      CROP SUPPLY EQUATIONS                                     *
*                                                                 *
*****
```

QUANTITY SUPPLIED - WHEAT:

62:JPQSWH JPQSWH'DEF == JPARWH'N*JPYDWH'N

QUANTITY SUPPLIED - CORN :

63:JPQSCN JPQSCN'DEF == JPARCN'N*JPYDCN'N

QUANTITY SUPPLIED - OTHER COARSE GRAINS :

64:JPQSCG JPQSCG'DEF == JPARCG'N*JPYDCG'N

QUANTITY SUPPLIED - RICE :

65:JPQSRI JPQSRI'DEF == JPARRI'N*JPYDRI'N

QUANTITY SUPPLIED - SOYBEANS :

66:JPQSSB JPQSSB'DEF == JPARSB'N*JPYDSB'N

QUANTITY SUPPLIED - OTHER OILSEEDS :

67:JPQSOS JPQSOS'DEF == JPAROS'N*JPYDOS'N

* OILSEED PRODUCT EQUATIONS *

RATIO OF ((SOYBEAN CRUSHING RETURNS)/SOYBEAN PRICES):
68:JPBPM JPBPM'DEF == (JPQSSBSO'P*JPPSSO'DEF+JPQSSBSM'P*JPPSSM'DEF)/
JPPDSB'N

RATIO OF ((OTHER OILSEED CRUSHING RETURNS)/OTHER OILSEEDS PRICE):
69:JPOSPM JPOSPM'DEF == (JPQSOSOO'P*JPPSOO'DEF+JPQSOSOM'P*JPPSOM'DEF)/
JPPDOS'N

QUANTITY CRUSHED - SOYBEANS:
70:JPQCSB JPQCSB'N = JPQCSBI'C*JPBPM'DEF**JPQCSBPM'C*(1+JPQCSBTR'C)**TIME'X

QUANTITY CRUSHED - OTHER OILSEEDS:
71:JPQCOS JPQCOS'N = JPQCOSI'C*JPOSPM'DEF**JPQCOSPM'C*(1+JPQCOSTR'C)**TIME'X

QUANTITY SUPPLIED - SOYMEAL:
72:JPQSSM JPQSSM'DEF == JPQSSBSM'P*JPQCSB'N

QUANTITY SUPPLIED - OTHER MEALS:
73:JPQSOM JPQSOM'DEF == JPQSOSOM'P*JPQCOS'N

QUANTITY SUPPLIED - SOYOIL:
74:JPQSSO JPQSSO'DEF == JPQSSBSO'P*JPQCSB'N

QUANTITY SUPPLIED - OTHER OILS:
75:JPQSOO JPQSOO'DEF == JPQSOSOO'P*JPQCOS'N

* FEED COST EQUATIONS *

FEED COST (WEIGHTED) - BEEF+VEAL:
76:JPFCBF JPFCBF'DEF == JPFCBFOM'P*JPPDOM'N+JPFCBFSM'P*JPPDSM'N+JPFCBFCG'P*
JPPDCG'N+JPFCBFCN'P*JPPDCN'N+JPFCBFWH'P*JPPDWH'N

FEED COST (WEIGHTED) - PORK:
77:JPFCPK JPFCPK'DEF == JPFCPKOM'P*JPPDOM'N+JPFCPKSM'P*JPPDSM'N+JPFCPKCG'P*
JPPDCG'N+JPFCPKCN'P*JPPDCN'N+JPFCPKWH'P*JPPDWH'N

FEED COST (WEIGHTED) - MUTTON+LAMB:
78:JPFCML JPFCML'DEF == JPFCMLOM'P*JPPDOM'N+JPFCMLSM'P*JPPDSM'N+JPFCMLCG'P*
JPPDCG'N+JPFCMLCN'P*JPPDCN'N+JPFCMLWH'P*JPPDWH'N

FEED COST (WEIGHTED) - DAIRY-MILK:
79:JPFCDM JPFCDM'DEF == JPFCDMOM'P*JPPDOM'N+JPFCDMSM'P*JPPDSM'N+JPFCDMCG'P*
JPPDCG'N+JPFCDMCN'P*JPPDCN'N+JPFCDMWH'P*JPPDWH'N

FEED COST (WEIGHTED) - POULTRY-MEAT:
80:JPFCPM JPFCPM'DEF == JPFCPMOM'P*JPPDOM'N+JPFCPM SM'P*JPPDSM'N+JPFCPMCG'P*
JPPDCG'N+JPFCPMCN'P*JPPDCN'N+JPFCPMWH'P*JPPDWH'N

FEED COST (WEIGHTED) - POULTRY-EGGS:

81:JPFCPE JPFCPE'DEF == JPFCPEOM'P*JPPDOM'N+JPFCPESM'P*JPPDSM'N+JPFCPECG'P*
JPPDCG'N+JPFCPECN'P*JPPDCN'N+JPFCPEWH'P*JPPDWH'N

* LIVESTOCK NUMBER AND PRODUCT EQUATIONS *
* *****

LIVESTOCK NUMBERS - BEEF+VEAL:

82:JPLNBF JPLNBF'N = JPLNBF'N(-1)+JPLABF'N(-1)-JPLSBF'N(-1)

LIVESTOCK ADDITIONS - BEEF+VEAL:

83:JPLABF JPLABF'N = JPLABFI'C*(JPPSBF'DEF/JPFCBF'DEF)**JPLABFPC'C*(
JPPSBF'DEF(-1)/JPFCBF'DEF(-1))**JPLABFPL'C*JPLNBF'N

LIVESTOCK SLAUGHTER - BEEF+VEAL:

84:JPLSBF JPLSBF'N = JPLSBFI'C*(JPPSBF'DEF/JPFCBF'DEF)**JPLSBFPC'C*(
JPPSBF'DEF(-1)/JPFCBF'DEF(-1))**JPLSBFPL'C*JPLNBF'N

QUANTITY SUPPLIED - BEEF+VEAL:

85:JPQSBF JPQSBF'N = JPQSBFI'C*(JPPSBF'DEF/JPFCBF'DEF)**JPQSBFPC'C*(
JPPSBF'DEF(-1)/JPFCBF'DEF(-1))**JPQSBFPL'C*JPLSBF'N*(1+JPQSBFTR'C)
**TIME'X

LIVESTOCK NUMBERS - PORK:

86:JPLNPK JPLNPK'N = JPLNPK'N(-1)+JPLAPK'N(-1)-JPLSPK'N(-1)

LIVESTOCK ADDITIONS - PORK:

87:JPLAPK JPLAPK'N = JPLAPKI'C*(JPPSPK'DEF/JPFCPK'DEF)**JPLAPKPC'C*(
JPPSPK'DEF(-1)/JPFCPK'DEF(-1))**JPLAPKPL'C*JPLNPK'N

LIVESTOCK SLAUGHTER - PORK:

88:JPLSPK JPLSPK'N = JPLSPKI'C*(JPPSPK'DEF/JPFCPK'DEF)**JPLSPKPC'C*(
JPPSPK'DEF(-1)/JPFCPK'DEF(-1))**JPLSPKPL'C*JPLNPK'N

QUANTITY SUPPLIED - PORK:

89:JPQSPK JPQSPK'N = JPQSPKI'C*(JPPSPK'DEF/JPFCPK'DEF)**JPQSPKPC'C*(
JPPSPK'DEF(-1)/JPFCPK'DEF(-1))**JPQSPKPL'C*JPLSPK'N*(1+JPQSPKTR'C)
**TIME'X

LIVESTOCK NUMBERS - MUTTON+LAMB:

90:JPLNML JPLNML'N = JPLNML'N(-1)+JPLAML'N(-1)-JPLSML'N(-1)

LIVESTOCK ADDITIONS - MUTTON+LAMB:

91:JPLAML JPLAML'N = JPLAMLI'C*(JPPSML'DEF/JPFCML'DEF)**JPLAMLPC'C*(
JPPSML'DEF(-1)/JPFCML'DEF(-1))**JPLAMLPL'C*JPLNML'N

LIVESTOCK SLAUGHTER - MUTTON+LAMB:

92:JPLSML JPLSML'N = JPLSMLI'C*(JPPSML'DEF/JPFCML'DEF)**JPLSMLPC'C*(
JPPSML'DEF(-1)/JPFCML'DEF(-1))**JPLSMLPL'C*JPLNML'N

QUANTITY SUPPLIED - MUTTON+LAMB:

93:JPQSML JPQSML'N = JPQSMLI'C*(JPPSML'DEF/JPFCML'DEF)**JPQSMLPC'C*(
JPPSML'DEF(-1)/JPFCML'DEF(-1))**JPQSMLPL'C*JPLSML'N*(1+JPQSMLTR'C)
**TIME'X

LIVESTOCK NUMBERS - DAIRY-MILK:

94:JPLNDM JPLNDM'N = JPLNDMI'C*(JPPSDM'DEF/JPFCDM'DEF)**JPLNDMPC'C*(
JPPSDM'DEF(-1)/JPFCDM'DEF(-1))**JPLNDMPL'C*JPLNDM'N(-1)**
JPLNDMLG'C

QUANTITY SUPPLIED - DAIRY-MILK:

95:JPQSDM JPQSDM'N = JPQSDMI'C*(JPPSDM'DEF/JPFCDM'DEF)**JPQSDMPC'C*(
JPPSDM'DEF(-1)/JPFCDM'DEF(-1))**JPQSDMPL'C*JPLNDM'N*(1+JPQSDMTR'C)
**TIME'X

QUANTITY SUPPLIED - POULTRY-MEAT:

96:JPQSPM JPQSPM'N = JPQSPMI'C*(JPPSPM'DEF/JPFCDM'DEF)**JPQSPMPC'C*(
JPPSPM'DEF(-1)/JPFCDM'DEF(-1))**JPQSPMPL'C*(1+JPQSPMTR'C)**TIME'X

LIVESTOCK NUMBERS - POULTRY-EGGS:

97:JPLNPE JPLNPE'N = JPLNPEI'C*(JPPSPE'DEF/JPFCDM'DEF)**JPLNPEPC'C*(
JPPSPE'DEF(-1)/JPFCDM'DEF(-1))**JPLNPEPL'C*JPLNPE'N(-1)**
JPLNPELG'C

QUANTITY SUPPLIED - POULTRY-EGGS:

98:JPQSPE JPQSPE'N = JPQSPEI'C*(JPPSPE'DEF/JPFCDM'DEF)**JPQSPEPC'C*(
JPPSPE'DEF(-1)/JPFCDM'DEF(-1))**JPQSPEPL'C*JPLNPE'N*(1+JPQSPETR'C)
**TIME'X

* DAIRY PRODUCT EQUATIONS *
* *

QUANTITY OF MANUFACTURING MILK AVAILABLE:

99:JPQMDM JPQMDM'DEF == JPQSDM'N-JPQDDM'N

QUANTITY SUPPLIED - DAIRY-BUTTER:

100:JPQSDB JPQSDB'N = JPQSDBI'C*(JPPSDB'DEF/JPPSDM'DEF)**JPQSDBDB'C*(
JPPSDC'DEF/JPPSDM'DEF)**JPQSDBDC'C*(JPPSDO'DEF/JPPSDM'DEF)**
JPQSDBDO'C*JPQMDM'DEF

QUANTITY SUPPLIED - DAIRY-CHEESE:

101:JPQSDC JPQSDC'N = JPQSDCI'C*(JPPSDB'DEF/JPPSDM'DEF)**JPQSDCDB'C*(
JPPSDC'DEF/JPPSDM'DEF)**JPQSDCDC'C*(JPPSDO'DEF/JPPSDM'DEF)**
JPQSDCDO'C*JPQMDM'DEF

QUANTITY SUPPLIED - DAIRY-OTHER PRODUCTS:

102:JPQSDO JPQSDO'N = JPQSDOI'C*(JPPSDB'DEF/JPPSDM'DEF)**JPQSDODB'C*(
JPPSDC'DEF/JPPSDM'DEF)**JPQSDODC'C*(JPPSDO'DEF/JPPSDM'DEF)**
JPQSDODO'C*JPQMDM'DEF

* FEED DEMAND EQUATIONS *
* *

LIVESTOCK PRICE INDEX (WEIGHTED) FOR FEED DEMAND:

103:JPLPI JPLPI'DEF == JPLPWTBF'P*JPPSBF'DEF+JPLPWTBK'P*JPPSPK'DEF+
JPLPWTML'P*JPPSML'DEF+JPLPWTDM'P*JPPSDM'DEF+JPLPWTM'P*JPPSPM'DEF+
JPLPWTPE'P*JPPSPE'DEF

DEFINITION OF GRAIN CONSUMING ANIMAL UNIT:

104:JPGCAU JPGCAU'DEF == JPGCAUBF'P*JPLNBF'N+JPGCAUPK'P*JPLNPK'N+JPGCAUML'P*
JPLNML'N+JPGCAUDM'P*JPLNDM'N+JPGCMUPM'P*JPQSPM'N+JPGCAUPE'P*
JPLNPE'N

QUANTITY FEED DEMANDED - WHEAT:

105:JPQFWH JPQFWH'N = JPQFWHI'C*(JPPDWH'N/JPLPI'DEF)**JPQFWHWH'C*(JPPDCN'N/
JPLPI'DEF)**JPQFWHCN'C*(JPPDCG'N/JPLPI'DEF)**JPQFWHCG'C*(JPPDSM'N/
JPLPI'DEF)**JPQFWHSM'C*(JPPDOM'N/JPLPI'DEF)**JPQFWHOM'C*JPGCAU'DEF

QUANTITY FEED DEMANDED - CORN:

106:JPQFCN JPQFCN'N = JPQFCNI'C*(JPPDWH'N/JPLPI'DEF)**JPQFCNWH'C*(JPPDCN'N/
JPLPI'DEF)**JPQFCNCN'C*(JPPDCG'N/JPLPI'DEF)**JPQFCNCG'C*(JPPDSM'N/
JPLPI'DEF)**JPQFCNSM'C*(JPPDOM'N/JPLPI'DEF)**JPQFCNOM'C*JPGCAU'DEF

QUANTITY FEED DEMANDED - OTHER COARSE GRAINS:

107:JPQFCG JPQFCG'N = JPQFCGI'C*(JPPDWH'N/JPLPI'DEF)**JPQFCGWH'C*(JPPDCN'N/
JPLPI'DEF)**JPQFCGCN'C*(JPPDCG'N/JPLPI'DEF)**JPQFCGCG'C*(JPPDSM'N/
JPLPI'DEF)**JPQFCGSM'C*(JPPDOM'N/JPLPI'DEF)**JPQFCGOM'C*JPGCAU'DEF

QUANTITY FEED DEMANDED - SOYMEAL:

108:JPQFSM JPQFSM'N = JPQFSMI'C*(JPPDWH'N/JPLPI'DEF)**JPQFSMWH'C*(JPPDCN'N/
JPLPI'DEF)**JPQFSMCN'C*(JPPDCG'N/JPLPI'DEF)**JPQFSMCG'C*(JPPDSM'N/
JPLPI'DEF)**JPQFSMSM'C*(JPPDOM'N/JPLPI'DEF)**JPQFSMOM'C*JPGCAU'DEF

QUANTITY FEED DEMANDED - OTHER MEALS:

109:JPQFOM JPQFOM'N = JPQFOMI'C*(JPPDWH'N/JPLPI'DEF)**JPQFOMWH'C*(JPPDCN'N/
JPLPI'DEF)**JPQFOMCN'C*(JPPDCG'N/JPLPI'DEF)**JPQFOMCG'C*(JPPDSM'N/
JPLPI'DEF)**JPQFOMSM'C*(JPPDOM'N/JPLPI'DEF)**JPQFOMOM'C*JPGCAU'DEF

* FOOD (AND NON-FEED) DEMAND EQUATIONS *
* *

QUANTITY DEMANDED - BEEF+VEAL:

110:JPQDBF JPQDBF'N = JPQDBFI'C*(JPPDBF'N/JPPNG'X)**JPQDBFBF'C*(JPPDPK'N/
JPPNG'X)**JPQDBFBK'C*(JPPDML'N/JPPNG'X)**JPQDBFML'C*(JPPDDM'N/
JPPNG'X)**JPQDBFDM'C*(JPPDPM'N/JPPNG'X)**JPQDBFPM'C*(JPPDPE'N/
JPPNG'X)**JPQDBFPE'C*(JPPDWH'N/JPPNG'X)**JPQDBFWH'C*(JPPDCN'N/
JPPNG'X)**JPQDBFCN'C*(JPPDCG'N/JPPNG'X)**JPQDBFCG'C*(JPPDRI'N/
JPPNG'X)**JPQDBFRI'C*(JPPDSB'N/JPPNG'X)**JPQDBFSB'C*(JPPDOS'N/
JPPNG'X)**JPQDBFOS'C*(JPPDSM'N/JPPNG'X)**JPQDBFSM'C*(JPPDSO'N/
JPPNG'X)**JPQDBFSO'C*(JPPDOM'N/JPPNG'X)**JPQDBFOM'C*(JPPDOO'N/
JPPNG'X)**JPQDBFOO'C*(JPPDDB'N/JPPNG'X)**JPQDBFDB'C*(JPPDDC'N/
JPPNG'X)**JPQDBFDC'C*(JPPDDO'N/JPPNG'X)**JPQDBFDO'C*JPPDFI'X**
JPQDBFFI'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDBFIN'C*JPPOP'X

QUANTITY DEMANDED - PORK:

111:JPQDPK JPQDPK'N = JPQDPKI'C*(JPPDBF'N/JPPNG'X)**JPQDPKBF'C*(JPPDPK'N/
JPPNG'X)**JPQDPKPK'C*(JPPDML'N/JPPNG'X)**JPQDPKML'C*(JPPDDM'N/
JPPNG'X)**JPQDPKDM'C*(JPPDPM'N/JPPNG'X)**JPQDPKPM'C*(JPPDPE'N/
JPPNG'X)**JPQDPKPE'C*(JPPDWH'N/JPPNG'X)**JPQDPKWH'C*(JPPDCN'N/
JPPNG'X)**JPQDPKCN'C*(JPPDCG'N/JPPNG'X)**JPQDPKCG'C*(JPPDRI'N/
JPPNG'X)**JPQDPKRI'C*(JPPDSB'N/JPPNG'X)**JPQDPKSB'C*(JPPDOS'N/
JPPNG'X)**JPQDPKOS'C*(JPPDSM'N/JPPNG'X)**JPQDPKSM'C*(JPPDSO'N/
JPPNG'X)

JPPNG'X)**JPQDPKSO'C*(JPPDOM'N/JPPNG'X)**JPQDPKOM'C*(JPPDOO'N/
JPPNG'X)**JPQDPKOO'C*(JPPDDB'N/JPPNG'X)**JPQDPKDB'C*(JPPDDC'N/
JPPNG'X)**JPQDPKDC'C*(JPPDDO'N/JPPNG'X)**JPQDPKDO'C*JPPDFI'X**
JPQDPKFI'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDPKIN'C*JPPOP'X

QUANTITY DEMANDED - POULTRY-MEAT:

112:JPQDPM JPQDPM'N = JPQDPMI'C*(JPPDBF'N/JPPNG'X)**JPQDPMBF'C*(JPPDPK'N/
JPPNG'X)**JPQDPMPK'C*(JPPDML'N/JPPNG'X)**JPQDPMML'C*(JPPDDM'N/
JPPNG'X)**JPQDPMDM'C*(JPPDPM'N/JPPNG'X)**JPQDMPM'C*(JPPDPE'N/
JPPNG'X)**JPQDPMPE'C*(JPPDWH'N/JPPNG'X)**JPQDPMWH'C*(JPPDCN'N/
JPPNG'X)**JPQDPMCN'C*(JPPDCG'N/JPPNG'X)**JPQDPMCG'C*(JPPDRI'N/
JPPNG'X)**JPQDPMRI'C*(JPPDSB'N/JPPNG'X)**JPQDPMBS'C*(JPPDOS'N/
JPPNG'X)**JPQDPMOS'C*(JPPDSM'N/JPPNG'X)**JPQDPMMS'C*(JPPDSO'N/
JPPNG'X)**JPQDPMSO'C*(JPPDOM'N/JPPNG'X)**JPQDPMOM'C*(JPPDOO'N/
JPPNG'X)**JPQDPMOO'C*(JPPDDB'N/JPPNG'X)**JPQDPMDB'C*(JPPDDC'N/
JPPNG'X)**JPQDPMDC'C*(JPPDDO'N/JPPNG'X)**JPQDPMDO'C*JPPDFI'X**
JPQDPMFI'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDPMIN'C*JPPOP'X

QUANTITY DEMANDED - POULTRY-EGGS:

113:JPQDPE JPQDPE'N = JPQDPEI'C*(JPPDBF'N/JPPNG'X)**JPQDPEBF'C*(JPPDPK'N/
JPPNG'X)**JPQDPEPK'C*(JPPDML'N/JPPNG'X)**JPQDPEML'C*(JPPDDM'N/
JPPNG'X)**JPQDPEDM'C*(JPPDPM'N/JPPNG'X)**JPQDPEPM'C*(JPPDPE'N/
JPPNG'X)**JPQDPEPE'C*(JPPDWH'N/JPPNG'X)**JPQDPEWH'C*(JPPDCN'N/
JPPNG'X)**JPQDPECN'C*(JPPDCG'N/JPPNG'X)**JPQDPECG'C*(JPPDRI'N/
JPPNG'X)**JPQDPERI'C*(JPPDSB'N/JPPNG'X)**JPQDPEBS'C*(JPPDOS'N/
JPPNG'X)**JPQDPEOS'C*(JPPDSM'N/JPPNG'X)**JPQDPESM'C*(JPPDSO'N/
JPPNG'X)**JPQDPESO'C*(JPPDOM'N/JPPNG'X)**JPQDPEOM'C*(JPPDOO'N/
JPPNG'X)**JPQDPEOO'C*(JPPDDB'N/JPPNG'X)**JPQDPEDB'C*(JPPDDC'N/
JPPNG'X)**JPQDPEDC'C*(JPPDDO'N/JPPNG'X)**JPQDPEDO'C*JPPDFI'X**
JPQDPEFI'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDPEIN'C*JPPOP'X

QUANTITY DEMANDED - RICE:

114:JPQDRI JPQDRI'N = JPQDRII'C*(JPPDBF'N/JPPNG'X)**JPQDRIBF'C*(JPPDPK'N/
JPPNG'X)**JPQDRIPK'C*(JPPDML'N/JPPNG'X)**JPQDRIML'C*(JPPDDM'N/
JPPNG'X)**JPQDRIDM'C*(JPPDPM'N/JPPNG'X)**JPQDRIPM'C*(JPPDPE'N/
JPPNG'X)**JPQDRIPE'C*(JPPDWH'N/JPPNG'X)**JPQDRIWH'C*(JPPDCN'N/
JPPNG'X)**JPQDRICN'C*(JPPDCG'N/JPPNG'X)**JPQDRICG'C*(JPPDRI'N/
JPPNG'X)**JPQDRIRI'C*(JPPDSB'N/JPPNG'X)**JPQDRISB'C*(JPPDOS'N/
JPPNG'X)**JPQDRIOS'C*(JPPDSM'N/JPPNG'X)**JPQDRISM'C*(JPPDSO'N/
JPPNG'X)**JPQDRISO'C*(JPPDOM'N/JPPNG'X)**JPQDRIOM'C*(JPPDOO'N/
JPPNG'X)**JPQDRIOO'C*(JPPDDB'N/JPPNG'X)**JPQDRIDB'C*(JPPDDC'N/
JPPNG'X)**JPQDRIDC'C*(JPPDDO'N/JPPNG'X)**JPQDRIDO'C*JPPDFI'X**
JPQDRIFI'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDRIIN'C*JPPOP'X

QUANTITY DEMANDED - MUTTON+LAMB:

115:JPQDML JPQDML'N = JPQDMLI'C*(JPPDBF'N/JPPNG'X)**JPQDMLBF'C*(JPPDPK'N/
JPPNG'X)**JPQDMLPK'C*(JPPDML'N/JPPNG'X)**JPQDMLML'C*(JPPDDM'N/
JPPNG'X)**JPQDMLDM'C*(JPPDPM'N/JPPNG'X)**JPQDMLPM'C*(JPPDPE'N/
JPPNG'X)**JPQDMLPE'C*(JPPDWH'N/JPPNG'X)**JPQDMLWH'C*(JPPDCN'N/
JPPNG'X)**JPQDMLCN'C*(JPPDCG'N/JPPNG'X)**JPQDMLCG'C*(JPPDRI'N/
JPPNG'X)**JPQDMLRI'C*(JPPDSB'N/JPPNG'X)**JPQDMLSB'C*(JPPDOS'N/
JPPNG'X)**JPQDMLLOS'C*(JPPDSM'N/JPPNG'X)**JPQDMLSM'C*(JPPDSO'N/
JPPNG'X)**JPQDMLSO'C*(JPPDOM'N/JPPNG'X)**JPQDMLOM'C*(JPPDOO'N/
JPPNG'X)**JPQDMLOO'C*(JPPDDB'N/JPPNG'X)**JPQDMLDB'C*(JPPDDC'N/
JPPNG'X)**JPQDMLDC'C*(JPPDDO'N/JPPNG'X)**JPQDMLDO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDMLIN'C*JPPOP'X

QUANTITY DEMANDED - DAIRY-MILK:

116:JPQDDM JPQDDM'N = JPQDDMI'C*(JPPDBF'N/JPPNG'X)**JPQDDMBF'C*(JPPDPK'N/JPPNG'X)**JPQDDMPK'C*(JPPDML'N/JPPNG'X)**JPQDDMML'C*(JPPDDM'N/JPPNG'X)**JPQDDMDM'C*(JPPDPM'N/JPPNG'X)**JPQDDMPM'C*(JPPDPE'N/JPPNG'X)**JPQDDMPE'C*(JPPDWH'N/JPPNG'X)**JPQDDMWH'C*(JPPDCN'N/JPPNG'X)**JPQDDMCN'C*(JPPDCG'N/JPPNG'X)**JPQDDMCG'C*(JPPDRI'N/JPPNG'X)**JPQDDMRI'C*(JPPDSB'N/JPPNG'X)**JPQDDMSB'C*(JPPDOS'N/JPPNG'X)**JPQDDMOS'C*(JPPDSM'N/JPPNG'X)**JPQDDMSM'C*(JPPDSO'N/JPPNG'X)**JPQDDMSO'C*(JPPDOM'N/JPPNG'X)**JPQDDMOM'C*(JPPDOO'N/JPPNG'X)**JPQDDMOO'C*(JPPDDB'N/JPPNG'X)**JPQDDMDB'C*(JPPDDC'N/JPPNG'X)**JPQDDMLC'C*(JPPDDO'N/JPPNG'X)**JPQDDMDO'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDDMIN'C*JPPOP'X

QUANTITY DEMANDED - WHEAT:

117:JPQDWH JPQDWH'N = JPQDWHI'C*((JPPDBF'N/JPPNG'X)**JPQDWHBF'C*(JPPDPK'N/JPPNG'X)**JPQDWHPK'C*(JPPDML'N/JPPNG'X)**JPQDWHML'C*(JPPDDM'N/JPPNG'X)**JPQDWHDM'C*(JPPDPM'N/JPPNG'X)**JPQDWHPM'C*(JPPDPE'N/JPPNG'X)**JPQDWHPE'C*(JPPDWH'N/JPPNG'X)**JPQDWHWH'C*(JPPDCN'N/JPPNG'X)**JPQDWHCN'C*(JPPDCG'N/JPPNG'X)**JPQDWHCG'C*(JPPDRI'N/JPPNG'X)**JPQDWHRI'C*(JPPDSB'N/JPPNG'X)**JPQDWHSB'C*(JPPDOS'N/JPPNG'X)**JPQDWHOS'C*(JPPDSM'N/JPPNG'X)**JPQDWHSM'C*(JPPDSO'N/JPPNG'X)**JPQDWHSO'C*(JPPDOM'N/JPPNG'X)**JPQDWHOM'C*(JPPDOO'N/JPPNG'X)**JPQDWHOO'C*(JPPDDB'N/JPPNG'X)**JPQDWHDB'C*(JPPDDC'N/JPPNG'X)**JPQDWHDC'C*(JPPDDO'N/JPPNG'X)**JPQDWHDO'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDWHIN'C*JPPOP'X

QUANTITY DEMANDED - CORN:

118:JPQDCN JPQDCN'N = JPQDCNI'C*((JPPDBF'N/JPPNG'X)**JPQDCNBF'C*(JPPDPK'N/JPPNG'X)**JPQDCNPK'C*(JPPDML'N/JPPNG'X)**JPQDCNML'C*(JPPDDM'N/JPPNG'X)**JPQDCNDM'C*(JPPDPM'N/JPPNG'X)**JPQDCNPM'C*(JPPDPE'N/JPPNG'X)**JPQDCNPE'C*(JPPDWH'N/JPPNG'X)**JPQDCNWH'C*(JPPDCN'N/JPPNG'X)**JPQDCNCN'C*(JPPDCG'N/JPPNG'X)**JPQDCNCG'C*(JPPDRI'N/JPPNG'X)**JPQDCNRI'C*(JPPDSB'N/JPPNG'X)**JPQDCNSB'C*(JPPDOS'N/JPPNG'X)**JPQDCNOS'C*(JPPDSM'N/JPPNG'X)**JPQDCNSM'C*(JPPDSO'N/JPPNG'X)**JPQDCNSO'C*(JPPDOM'N/JPPNG'X)**JPQDCNOM'C*(JPPDOO'N/JPPNG'X)**JPQDCNOO'C*(JPPDDB'N/JPPNG'X)**JPQDCNDB'C*(JPPDDC'N/JPPNG'X)**JPQDCNDC'C*(JPPDDO'N/JPPNG'X)**JPQDCNDO'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDCNIN'C*JPPOP'X

QUANTITY DEMANDED - OTHER COARSE GRAINS:

119:JPQDCG JPQDCG'N = JPQDCGI'C*((JPPDBF'N/JPPNG'X)**JPQDCGBF'C*(JPPDPK'N/JPPNG'X)**JPQDCGPK'C*(JPPDML'N/JPPNG'X)**JPQDCGML'C*(JPPDDM'N/JPPNG'X)**JPQDCGDM'C*(JPPDPM'N/JPPNG'X)**JPQDCGPM'C*(JPPDPE'N/JPPNG'X)**JPQDCGPE'C*(JPPDWH'N/JPPNG'X)**JPQDCGWH'C*(JPPDCN'N/JPPNG'X)**JPQDCGCN'C*(JPPDCG'N/JPPNG'X)**JPQDCGCG'C*(JPPDRI'N/JPPNG'X)**JPQDCGRI'C*(JPPDSB'N/JPPNG'X)**JPQDCGSB'C*(JPPDOS'N/JPPNG'X)**JPQDCGOS'C*(JPPDSM'N/JPPNG'X)**JPQDCGSM'C*(JPPDSO'N/JPPNG'X)**JPQDCGSO'C*(JPPDOM'N/JPPNG'X)**JPQDCGOM'C*(JPPDOO'N/JPPNG'X)**JPQDCGOO'C*(JPPDDB'N/JPPNG'X)**JPQDCGDB'C*(JPPDDC'N/JPPNG'X)**JPQDCGDC'C*(JPPDDO'N/JPPNG'X)**JPQDCGDO'C*(JPINC'X/(JPPNG'X*JPPOP'X))**JPQDCGIN'C*JPPOP'X

QUANTITY DEMANDED - SOYBEANS:

120:JPQDSB JPQDSB'N = JPQDSBI'C*((JPPDBF'N/JPPNG'X)**JPQDSBBF'C*(JPPDPK'N/JPPNG'X)**JPQDSBPK'C*(JPPDML'N/JPPNG'X)**JPQDSBML'C*(JPPDDM'N/JPPNG'X)**JPQDSBDM'C*(JPPDPM'N/JPPNG'X)**JPQDSBPM'C*(JPPDPE'N/

JPPNG'X)**JPQDSBPE'C*(JPPDWH'N/JPPNG'X)**JPQDSBWH'C*(JPPDCN'N/
 JPPNG'X)**JPQDSBCN'C*(JPPDCG'N/JPPNG'X)**JPQDSBCG'C*(JPPDRI'N/
 JPPNG'X)**JPQDSBRI'C*(JPPDSB'N/JPPNG'X)**JPQDSBSB'C*(JPPDOS'N/
 JPPNG'X)**JPQDSBOS'C*(JPPDSM'N/JPPNG'X)**JPQDSBSM'C*(JPPDSO'N/
 JPPNG'X)**JPQDSBSO'C*(JPPDOM'N/JPPNG'X)**JPQDSBOM'C*(JPPDOO'N/
 JPPNG'X)**JPQDSBOO'C*(JPPDDB'N/JPPNG'X)**JPQDSBDB'C*(JPPDDC'N/
 JPPNG'X)**JPQDSBDC'C*(JPPDDO'N/JPPNG'X)**JPQDSBDO'C*(JPINC'X/(
 JPPNG'X*JPPOP'X))**JPQDSBIN'C*JPPOP'X)

QUANTITY DEMANDED - OTHER OILSEEDS:

121:JPQDOS JPQDOS'N = JPQDOSI'C*((JPPDBF'N/JPPNG'X)**JPQDOSBF'C*(JPPDPK'N/
 JPPNG'X)**JPQDOSPK'C*(JPPDML'N/JPPNG'X)**JPQDOSML'C*(JPPDDM'N/
 JPPNG'X)**JPQDOSDM'C*(JPPDPM'N/JPPNG'X)**JPQDOSPM'C*(JPPDPE'N/
 JPPNG'X)**JPQDOSPE'C*(JPPDWH'N/JPPNG'X)**JPQDOSWH'C*(JPPDCN'N/
 JPPNG'X)**JPQDOSCN'C*(JPPDCG'N/JPPNG'X)**JPQDOSCG'C*(JPPDRI'N/
 JPPNG'X)**JPQDOSRI'C*(JPPDSB'N/JPPNG'X)**JPQDOSSB'C*(JPPDOS'N/
 JPPNG'X)**JPQDOSOS'C*(JPPDSM'N/JPPNG'X)**JPQDOSSM'C*(JPPDSO'N/
 JPPNG'X)**JPQDOSSO'C*(JPPDOM'N/JPPNG'X)**JPQDOSOM'C*(JPPDOO'N/
 JPPNG'X)**JPQDOSOO'C*(JPPDDB'N/JPPNG'X)**JPQDOSDB'C*(JPPDDC'N/
 JPPNG'X)**JPQDOSDC'C*(JPPDDO'N/JPPNG'X)**JPQDOSDO'C*(JPINC'X/(
 JPPNG'X*JPPOP'X))**JPQDOSIN'C*JPPOP'X)

QUANTITY DEMANDED - SOYMEAL:

122:JPQDSM JPQDSM'N = JPQDSMI'C*((JPPDBF'N/JPPNG'X)**JPQDSMBF'C*(JPPDPK'N/
 JPPNG'X)**JPQDSMPK'C*(JPPDML'N/JPPNG'X)**JPQDSMML'C*(JPPDDM'N/
 JPPNG'X)**JPQDSMDM'C*(JPPDPM'N/JPPNG'X)**JPQDSMPM'C*(JPPDPE'N/
 JPPNG'X)**JPQDSMPE'C*(JPPDWH'N/JPPNG'X)**JPQDSMWH'C*(JPPDCN'N/
 JPPNG'X)**JPQDSMCN'C*(JPPDCG'N/JPPNG'X)**JPQDSMCG'C*(JPPDRI'N/
 JPPNG'X)**JPQDSMRI'C*(JPPDSB'N/JPPNG'X)**JPQDSMSB'C*(JPPDOS'N/
 JPPNG'X)**JPQDSMOS'C*(JPPDSM'N/JPPNG'X)**JPQDSMSM'C*(JPPDSO'N/
 JPPNG'X)**JPQDSMSO'C*(JPPDOM'N/JPPNG'X)**JPQDSMOM'C*(JPPDOO'N/
 JPPNG'X)**JPQDSMOO'C*(JPPDDB'N/JPPNG'X)**JPQDSMDB'C*(JPPDDC'N/
 JPPNG'X)**JPQDSMDC'C*(JPPDDO'N/JPPNG'X)**JPQDSMDO'C*(JPINC'X/(
 JPPNG'X*JPPOP'X))**JPQDSMIN'C*JPPOP'X)

QUANTITY DEMANDED - SOYOIL:

123:JPQDSO JPQDSO'N = JPQDSOI'C*((JPPDBF'N/JPPNG'X)**JPQDSOBF'C*(JPPDPK'N/
 JPPNG'X)**JPQDSOPK'C*(JPPDML'N/JPPNG'X)**JPQDSOML'C*(JPPDDM'N/
 JPPNG'X)**JPQDSODM'C*(JPPDPM'N/JPPNG'X)**JPQDSOPM'C*(JPPDPE'N/
 JPPNG'X)**JPQDSOPE'C*(JPPDWH'N/JPPNG'X)**JPQDSOWH'C*(JPPDCN'N/
 JPPNG'X)**JPQDSOCN'C*(JPPDCG'N/JPPNG'X)**JPQDSOCG'C*(JPPDRI'N/
 JPPNG'X)**JPQDSORI'C*(JPPDSB'N/JPPNG'X)**JPQDSOSB'C*(JPPDOS'N/
 JPPNG'X)**JPQDSOOS'C*(JPPDSM'N/JPPNG'X)**JPQDSOSM'C*(JPPDSO'N/
 JPPNG'X)**JPQDSOSO'C*(JPPDOM'N/JPPNG'X)**JPQDSOOM'C*(JPPDOO'N/
 JPPNG'X)**JPQDSOOO'C*(JPPDDB'N/JPPNG'X)**JPQDSODB'C*(JPPDDC'N/
 JPPNG'X)**JPQDSODC'C*(JPPDDO'N/JPPNG'X)**JPQDSODO'C*(JPINC'X/(
 JPPNG'X*JPPOP'X))**JPQDSOIN'C*JPPOP'X)

QUANTITY DEMANDED - OTHER MEALS:

124:JPQDOM JPQDOM'N = JPQDOMI'C*((JPPDBF'N/JPPNG'X)**JPQDOMBF'C*(JPPDPK'N/
 JPPNG'X)**JPQDOMPK'C*(JPPDML'N/JPPNG'X)**JPQDOMML'C*(JPPDDM'N/
 JPPNG'X)**JPQDOMDM'C*(JPPDPM'N/JPPNG'X)**JPQDOMPM'C*(JPPDPE'N/
 JPPNG'X)**JPQDOMPE'C*(JPPDWH'N/JPPNG'X)**JPQDOMWH'C*(JPPDCN'N/
 JPPNG'X)**JPQDOMCN'C*(JPPDCG'N/JPPNG'X)**JPQDOMCG'C*(JPPDRI'N/
 JPPNG'X)**JPQDOMRI'C*(JPPDSB'N/JPPNG'X)**JPQDOMSB'C*(JPPDOS'N/
 JPPNG'X)**JPQDOMOS'C*(JPPDSM'N/JPPNG'X)**JPQDOMSM'C*(JPPDSO'N/

JPPNG'X)**JPQDOMSO'C*(JPPDOM'N/JPPNG'X)**JPQDOMOM'C*(JPPDOO'N/
JPPNG'X)**JPQDOMOO'C*(JPPDDB'N/JPPNG'X)**JPQDOMDB'C*(JPPDDC'N/
JPPNG'X)**JPQDOMDC'C*(JPPDDO'N/JPPNG'X)**JPQDOMDO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDOMIN'C*JPPOP'X)

QUANTITY DEMANDED - OTHER OILS:

125:JPQDOO JPQDOO'N = JPQDOOI'C*((JPPDBF'N/JPPNG'X)**JPQDOOBF'C*(JPPDPK'N/
JPPNG'X)**JPQDOOPK'C*(JPPDML'N/JPPNG'X)**JPQDOOML'C*(JPPDDM'N/
JPPNG'X)**JPQDOODM'C*(JPPDPM'N/JPPNG'X)**JPQDOOPM'C*(JPPDPE'N/
JPPNG'X)**JPQDOOPE'C*(JPPDWH'N/JPPNG'X)**JPQDOOWH'C*(JPPDCN'N/
JPPNG'X)**JPQDOOCN'C*(JPPDCG'N/JPPNG'X)**JPQDOOCG'C*(JPPDRI'N/
JPPNG'X)**JPQDOORI'C*(JPPDSB'N/JPPNG'X)**JPQDOOSB'C*(JPPDOS'N/
JPPNG'X)**JPQDOOOS'C*(JPPDSM'N/JPPNG'X)**JPQDOOSM'C*(JPPDSO'N/
JPPNG'X)**JPQDOOSO'C*(JPPDOM'N/JPPNG'X)**JPQDOOOM'C*(JPPDOO'N/
JPPNG'X)**JPQDOOOO'C*(JPPDDB'N/JPPNG'X)**JPQDOODB'C*(JPPDDC'N/
JPPNG'X)**JPQDOODC'C*(JPPDDO'N/JPPNG'X)**JPQDOODO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDOOIN'C*JPPOP'X)

QUANTITY DEMANDED - DAIRY-BUTTER:

126:JPQDDB JPQDDB'N = JPQDDBI'C*((JPPDBF'N/JPPNG'X)**JPQDDBBF'C*(JPPDPK'N/
JPPNG'X)**JPQDDBPK'C*(JPPDML'N/JPPNG'X)**JPQDDBML'C*(JPPDDM'N/
JPPNG'X)**JPQDDBDM'C*(JPPDPM'N/JPPNG'X)**JPQDDBPM'C*(JPPDPE'N/
JPPNG'X)**JPQDDBPE'C*(JPPDWH'N/JPPNG'X)**JPQDDBWH'C*(JPPDCN'N/
JPPNG'X)**JPQDDBCN'C*(JPPDCG'N/JPPNG'X)**JPQDDBCG'C*(JPPDRI'N/
JPPNG'X)**JPQDDBRI'C*(JPPDSB'N/JPPNG'X)**JPQDDBSB'C*(JPPDOS'N/
JPPNG'X)**JPQDDBOS'C*(JPPDSM'N/JPPNG'X)**JPQDDBSM'C*(JPPDSO'N/
JPPNG'X)**JPQDDBSO'C*(JPPDOM'N/JPPNG'X)**JPQDDBOM'C*(JPPDOO'N/
JPPNG'X)**JPQDDBOO'C*(JPPDDB'N/JPPNG'X)**JPQDDBDB'C*(JPPDDC'N/
JPPNG'X)**JPQDDBDC'C*(JPPDDO'N/JPPNG'X)**JPQDDBDO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDDBIN'C*JPPOP'X)

QUANTITY DEMANDED - DAIRY-CHEESE:

127:JPQDDC JPQDDC'N = JPQDDCI'C*((JPPDBF'N/JPPNG'X)**JPQDDCBF'C*(JPPDPK'N/
JPPNG'X)**JPQDDCPK'C*(JPPDML'N/JPPNG'X)**JPQDDCML'C*(JPPDDM'N/
JPPNG'X)**JPQDDCDM'C*(JPPDPM'N/JPPNG'X)**JPQDDCPM'C*(JPPDPE'N/
JPPNG'X)**JPQDDCPE'C*(JPPDWH'N/JPPNG'X)**JPQDDCWH'C*(JPPDCN'N/
JPPNG'X)**JPQDDCCN'C*(JPPDCG'N/JPPNG'X)**JPQDDCCG'C*(JPPDRI'N/
JPPNG'X)**JPQDDCRI'C*(JPPDSB'N/JPPNG'X)**JPQDDCSB'C*(JPPDOS'N/
JPPNG'X)**JPQDDCOS'C*(JPPDSM'N/JPPNG'X)**JPQDDCSM'C*(JPPDSO'N/
JPPNG'X)**JPQDDCSO'C*(JPPDOM'N/JPPNG'X)**JPQDDCOM'C*(JPPDOO'N/
JPPNG'X)**JPQDDCOO'C*(JPPDDB'N/JPPNG'X)**JPQDDCDB'C*(JPPDDC'N/
JPPNG'X)**JPQDDCDC'C*(JPPDDO'N/JPPNG'X)**JPQDDCDO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDDCIN'C*JPPOP'X)

QUANTITY DEMANDED - DAIRY-OTHER PRODUCTS:

128:JPQDDO JPQDDO'N = JPQDDOI'C*((JPPDBF'N/JPPNG'X)**JPQDDOBF'C*(JPPDPK'N/
JPPNG'X)**JPQDDOPK'C*(JPPDML'N/JPPNG'X)**JPQDDOML'C*(JPPDDM'N/
JPPNG'X)**JPQDDODM'C*(JPPDPM'N/JPPNG'X)**JPQDDOPM'C*(JPPDPE'N/
JPPNG'X)**JPQDDOPE'C*(JPPDWH'N/JPPNG'X)**JPQDDOWH'C*(JPPDCN'N/
JPPNG'X)**JPQDDOCN'C*(JPPDCG'N/JPPNG'X)**JPQDDOCG'C*(JPPDRI'N/
JPPNG'X)**JPQDDORI'C*(JPPDSB'N/JPPNG'X)**JPQDDOSB'C*(JPPDOS'N/
JPPNG'X)**JPQDDOOS'C*(JPPDSM'N/JPPNG'X)**JPQDDOSM'C*(JPPDSO'N/
JPPNG'X)**JPQDDOSO'C*(JPPDOM'N/JPPNG'X)**JPQDDOOM'C*(JPPDOO'N/
JPPNG'X)**JPQDDOOO'C*(JPPDDB'N/JPPNG'X)**JPQDDODB'C*(JPPDDC'N/
JPPNG'X)**JPQDDODC'C*(JPPDDO'N/JPPNG'X)**JPQDDODO'C*(JPINC'X/(
JPPNG'X*JPPOP'X))**JPQDDOIN'C*JPPOP'X)

 * STOCK EQUATIONS *
 *

ENDING STOCKS - BEEF+VEAL:

129:JPSKBF JPSKBF'N = JPSKBFI'C*(JPPDBF'N/JPPNG'X)**JPSKBFBF'C*(JPQDBF'N+JPQSBF'N)

ENDING STOCKS - PORK:

130:JPSKPK JPSKPK'N = JPSKPKI'C*(JPPDPK'N/JPPNG'X)**JPSKPKPK'C*(JPQDPK'N+JPQSPK'N)

ENDING STOCKS - MUTTON+LAMB:

131:JPSKML JPSKML'N = JPSKMLI'C*(JPPDML'N/JPPNG'X)**JPSKMLML'C*(JPQDML'N+JPQSML'N)

ENDING STOCKS - POULTRY-MEAT:

132:JPSKPM JPSKPM'N = JPSKPMI'C*(JPPDPM'N/JPPNG'X)**JPSKPMPM'C*(JPQDPM'N+JPQSPM'N)

ENDING STOCKS - POULTRY-EGGS:

133:JPSKPE JPSKPE'N = JPSKPEI'C*(JPPDPE'N/JPPNG'X)**JPSKPEPE'C*(JPQDPE'N+JPQSPE'N)

ENDING STOCKS - WHEAT:

134:JPSKWH JPSKWH'N = JPSKWHI'C*(JPPDWH'N/JPPNG'X)**JPSKWHWH'C*(JPQSWH'DEF+JPQDWH'N+JPQFWH'N)

ENDING STOCKS - CORN:

135:JPSKCN JPSKCN'N = JPSKCNI'C*(JPPDCN'N/JPPNG'X)**JPSKCNCN'C*(JPQSCN'DEF+JPQDCN'N+JPQFCN'N)

ENDING STOCKS - OTHER COARSE GRAINS:

136:JPSKCG JPSKCG'N = JPSKCGI'C*(JPPDCG'N/JPPNG'X)**JPSKCGCG'C*(JPQSCG'DEF+JPQDCG'N+JPQFCG'N)

ENDING STOCKS - RICE:

137:JPSKRI JPSKRI'N = JPSKRII'C*(JPPDRI'N/JPPNG'X)**JPSKRIRI'C*(JPQSRI'DEF+JPQDRI'N)

ENDING STOCKS - SOYBEANS:

138:JPSKSB JPSKSB'N = JPSKSBI'C*(JPPDSB'N/JPPNG'X)**JPSKSBSB'C*(JPQSSB'DEF+JPQDSB'N+JPQCSB'N)

ENDING STOCKS - OTHER OILSEEDS:

139:JPSKOS JPSKOS'N = JPSKOSI'C*(JPPDOS'N/JPPNG'X)**JPSKOSOS'C*(JPQSOS'DEF+JPQDOS'N+JPQCOS'N)

ENDING STOCKS - SOYMEAL:

140:JPSKSM JPSKSM'N = JPSKSMI'C*(JPPDSM'N/JPPNG'X)**JPSKSMSM'C*(JPQSSM'DEF+JPQDSM'N+JPQFSM'N)

ENDING STOCKS - SOYOIL:

141:JPSKSO JPSKSO'N = JPSKSOI'C*(JPPDSO'N/JPPNG'X)**JPSKSOSO'C*(JPQDSO'N+JPQSSO'DEF)


```
142:JPSKOM JPSKOM'N = JPSKOMI'C*(JPPDOM'N/JPPNG'X)**JPSKOMOM'C*(JPQSOM'DEF+
    JPODOM'N+JPOFOM'N)
```

143:JPSK00 JPSK00'N = JPSK00I'C*(JPPD00'N/JPPNG'X)**JPSK0000'C*(JPQD00'N+JPQS00'DEF)

```
144:JPSKDB JPSKDB'N = JPSKDBI'C*(JPPDDB'N/JPPNG'X)**JPSKDBDB'C*(JPQDDB'N+
      JPOSDB'N)
```

```
145:JPSKDC JPSKDC'N = JPSKDCI'C*(JPPDDC'N/JPPNG'X)**JPSKDCDC'C*(JPQDDC'N+
      JPQSDC'N)
```

146:JPSKDO JPSKDO'N = JPSKDOI'C*(JPPDDO'N/JPPNG'X)**JPSKDODO'C*(JPQDDO'N+JPQSDO'N)

QUANTITY TRADED DEFINITION - BEEF+VEAL:

$$147: \text{JPOTBF JPOTBF}'N = \text{JPQSBF}'N - \text{JPQDBF}'N - (\text{JPSKBF}'N - \text{JPSKBF}'N(-1))$$
$$148: \text{JPOTPK JPOTPK}'\text{N} = \text{JPQSPK}'\text{N} - \text{JPQDPK}'\text{N} - (\text{JPSKPK}'\text{N} - \text{JPSKPK}'\text{N}(-1))$$
$$149: \text{JPOTML JPOTML}'N = \text{JPQSM}'N - \text{JPQDML}'N - (\text{JPSKML}'N - \text{JPSKML}'N(-1))$$
$$150: \text{JPOTPM JPOTPM}'N = \text{JPOSPM}'N - \text{JPODPM}'N - (\text{JPSKPM}'N - \text{JPSKPM}'N(-1))$$

151:JPOTPE JPOTPE'N = JPOSPE'N-JPODPE'N-(JPSKPE'N-JPSKPE'N(-1))

$$152: \text{JPOTWH JPOTWH}'\text{N} = \text{JPOSWH}'\text{DEF} - \text{JPODWH}'\text{N} - \text{JPOFWH}'\text{N} - (\text{JPSKWH}'\text{N} - \text{JPSKWH}'\text{N}(-1))$$
$$153: \text{JPQTCN JPQTCN}'N = \text{JPQSCN}'\text{DEF-JPQFCN}'N - \text{JPQDCN}'N - (\text{JPSKCN}'N - \text{JPSKCN}'N(-1))$$

154:JPOTCG JPOTCG'N = JPOSCG'DEF-JPODCG'N-JPOFCG'N-(JPSKCG'N-JPSKCG'N(-1))

155:JPQTRI JPQTRI'N = JPQSRI'DEF-JPQDRI'N-(JPSKRI'N-JPSKRI'N(-1))

156:JPOTSB JPOTSB'N = JPQSSB'DEF-JPQDSB'N-JPQCSB'N-(JPSKSB'N-JPSKSB'N(-1))

157:JPOTOS JPOTOS'N = JPQSOS'DEF-JPQDOS'N-JPQCOS'N-(JPSKOS'N-JPSKOS'N(-1))

QUANTITY TRADED DEFINITION - SOYMEAL:
158:JPQTSM JPQTSM'N = JPQSSM'DEF-JPQDSM'N-JPQFSM'N-(JPSKSM'N-JPSKSM'N(-1))

QUANTITY TRADED DEFINITION - SOYOIL:
159:JPQTSO JPQTSO'N = JPQSSO'DEF-JPQDSO'N-(JPSKSO'N-JPSKSO'N(-1))

QUANTITY TRADED DEFINITION - OTHER MEALS:
160:JPQTOM JPQTOM'N = JPQSOM'DEF-JPQDOM'N-JPQFOM'N-(JPSKOM'N-JPSKOM'N(-1))

QUANTITY TRADED DEFINITION - OTHER OILS:
161:JPQTOO JPQTOO'N = JPQSOO'DEF-JPQDOO'N-(JPSKOO'N-JPSKOO'N(-1))

QUANTITY TRADED DEFINITION - DAIRY-BUTTER:
162:JPQTDB JPQTDB'N = JPQSDB'N-JPQDDB'N-(JPSKDB'N-JPSKDB'N(-1))

QUANTITY TRADED DEFINITION - DAIRY-CHEESE:
163:JPQTDG JPQTDG'N = JPQSDG'N-JPQDDG'N-(JPSKDG'N-JPSKDG'N(-1))

QUANTITY TRADED DEFINITION - DAIRY-OTHER PRODUCTS:
164:JPQTDO JPQTDO'N = JPQSDO'N-JPQDDO'N-(JPSKDO'N-JPSKDO'N(-1))

TOTAL SUPPLY - BEEF+VEAL:
165:JPTSBF JPTSBF'DEF == JPQSBF'N

TOTAL SUPPLY - PORK:
166:JPTSPK JPTSPK'DEF == JPQSPK'N

TOTAL SUPPLY - MUTTON+LAMB:
167:JPTSML JPTSML'DEF == JPQSML'N

TOTAL SUPPLY - POULTRY-MEAT:
168:JPTSPM JPTSPM'DEF == JPQSPM'N

TOTAL SUPPLY - POULTRY-EGGS:
169:JPTSPE JPTSPE'DEF == JPQSPE'N

TOTAL SUPPLY - WHEAT:
170:JPTSWH JPTSWH'DEF == JPQSWH'DEF

TOTAL SUPPLY - CORN:
171:JPTSCN JPTSCN'DEF == JPQSCN'DEF

TOTAL SUPPLY - OTHER COARSE GRAINS:
172:JPTSCG JPTSCG'DEF == JPQSCG'DEF

TOTAL SUPPLY - RICE:
173:JPTSRI JPTSRI'DEF == JPQSRI'DEF

TOTAL SUPPLY - SOYBEANS:
174:JPTSSB JPTSSB'DEF == JPQSSB'DEF

TOTAL SUPPLY - OTHER OILSEEDS:
175:JPTSOS JPTSOS'DEF == JPQSOS'DEF

TOTAL SUPPLY - SOYMEAL:
176:JPTSSM JPTSSM'DEF == JPQSSM'DEF

TOTAL SUPPLY - SOYOIL:
177:JPTSSO JPTSSO'DEF == JPQSSO'DEF

TOTAL SUPPLY - OTHER MEALS:
178:JPTSOM JPTSOM'DEF == JPQSOM'DEF

TOTAL SUPPLY - OTHER OILS:
179:JPTS00 JPTS00'DEF == JPQS00'DEF

TOTAL SUPPLY - DAIRY-BUTTER:
180:JPTSDB JPTSDB'DEF == JPQSDB'N

TOTAL SUPPLY - DAIRY-CHEESE:
181:JPTSDC JPTSDC'DEF == JPQSDC'N

TOTAL SUPPLY - DAIRY-OTHER PRODUCTS:
182:JPTSDO JPTSDO'DEF == JPQSDO'N

TOTAL DEMAND - BEEF+VEAL:
183:JPTDBF JPTDBF'DEF == JPQDBF'N+(JPSKBF'N-JPSKBF'N(-1))

TOTAL DEMAND - PORK:
184:JPTDPK JPTDPK'DEF == JPQDPK'N+(JPSKPK'N-JPSKPK'N(-1))

TOTAL DEMAND - MUTTON+LAMB:
185:JPTDML JPTDML'DEF == JPQDML'N+(JPSKML'N-JPSKML'N(-1))

TOTAL DEMAND - POULTRY-MEAT:
186:JPTDPM JPTDPM'DEF == JPQDPM'N+(JPSKPM'N-JPSKPM'N(-1))

TOTAL DEMAND - POULTRY-EGGS:
187:JPTDPE JPTDPE'DEF == JPQDPE'N+(JPSKPE'N-JPSKPE'N(-1))

TOTAL DEMAND - WHEAT:
188:JPTDWH JPTDWH'DEF == JPQDWH'N+JPQFWH'N+(JPSKWH'N-JPSKWH'N(-1))

TOTAL DEMAND - CORN:
189:JPTDCN JPTDCN'DEF == JPQDCN'N+JPQFCN'N+(JPSKCN'N-JPSKCN'N(-1))

TOTAL DEMAND - OTHER COARSE GRAINS:
190:JPTDCG JPTDCG'DEF == JPQDCG'N+JPQFCG'N+(JPSKCG'N-JPSKCG'N(-1))

TOTAL DEMAND - RICE:
191:JPTDRI JPTDRI'DEF == JPQDRI'N+(JPSKRI'N-JPSKRI'N(-1))

TOTAL DEMAND - SOYBEANS:
192:JPTDSB JPTDSB'DEF == JPQDSB'N+JPQCSB'N+(JPSKSB'N-JPSKSB'N(-1))

TOTAL DEMAND - OTHER OILSEEDS:
193:JPTDOS JPTDOS'DEF == JPQDOS'N+JPQCOS'N+(JPSKOS'N-JPSKOS'N(-1))

TOTAL DEMAND - SOYMEAL:
194:JPTDSM JPTDSM'DEF == JPQDSM'N+JPQFSM'N+(JPSKSM'N-JPSKSM'N(-1))

TOTAL DEMAND - SOYOIL:
195:JPTDSO JPTDSO'DEF == JPQDSO'N+(JPSKSO'N-JPSKSO'N(-1))

TOTAL DEMAND - OTHER MEALS:
196:JPTDOM JPTDOM'DEF == JPQDOM'N+JPQFOM'N+(JPSKOM'N-JPSKOM'N(-1))

TOTAL DEMAND - OTHER OILS:
197:JPTDOO JPTDOO'DEF == JPQDOO'N+(JPSKOO'N-JPSKOO'N(-1))

TOTAL DEMAND - DAIRY-BUTTER:
198:JPTDDB JPTDDB'DEF == JPQDDB'N+(JPSKDB'N-JPSKDB'N(-1))

TOTAL DEMAND - DAIRY-CHEESE:
199:JPTDDC JPTDDC'DEF == JPQDDC'N+(JPSKDC'N-JPSKDC'N(-1))

TOTAL DEMAND - DAIRY-OTHER PRODUCTS:
200:JPTDDO JPTDDO'DEF == JPQDDO'N+(JPSKDO'N-JPSKDO'N(-1))

PRICE (ADJUSTMENT) RATIO - BEEF+VEAL:
201:JPPRBF JPPRBF'DEF == JPCPBF'P*(JPQTFB'N-(IF JPQTFB'N GE JPEQBF'POLN THEN
JPEQBF'POLN ELSE (IF JPQTFB'N LE -JPMQBF'POLN THEN -JPMQBF'POLN
ELSE 0)))/(JPTSBF'DEF+JPTDBF'DEF)

PRICE (ADJUSTMENT) RATIO - PORK:
202:JPPRPK JPPRPK'DEF == JPCPPK'P*(JPQTPK'N-(IF JPQTPK'N GE JPEQPK'POLN THEN
JPEQPK'POLN ELSE (IF JPQTPK'N LE -JPMQPK'POLN THEN -JPMQPK'POLN
ELSE 0)))/(JPTSPK'DEF+JPTDPK'DEF)

PRICE (ADJUSTMENT) RATIO - MUTTON+LAMB:
203:JPPRML JPPRML'DEF == JPCPML'P*(JPQTML'N-(IF JPQTML'N GE JPEQML'POLN THEN
JPEQML'POLN ELSE (IF JPQTML'N LE -JPMQML'POLN THEN -JPMQML'POLN
ELSE 0)))/(JPTSML'DEF+JPTDML'DEF)

PRICE (ADJUSTMENT) RATIO - POULTRY-MEAT:
204:JPPRPM JPPRPM'DEF == JPCPPM'P*(JPQTPM'N-(IF JPQTPM'N GE JPEQPM'POLN THEN
JPEQPM'POLN ELSE (IF JPQTPM'N LE -JPMQPM'POLN THEN -JPMQPM'POLN
ELSE 0)))/(JPTSPM'DEF+JPTDPM'DEF)

PRICE (ADJUSTMENT) RATIO - POULTRY-EGGS:
205:JPPRPE JPPRPE'DEF == JPCPPE'P*(JPQTPE'N-(IF JPQTPE'N GE JPEQPE'POLN THEN
JPEQPE'POLN ELSE (IF JPQTPE'N LE -JPMQPE'POLN THEN -JPMQPE'POLN
ELSE 0)))/(JPTSPE'DEF+JPTDPE'DEF)

PRICE (ADJUSTMENT) RATIO - WHEAT:
206:JPPRWH JPPRWH'DEF == JPCPWH'P*(JPQTWH'N-(IF JPQTWH'N GE JPEQWH'POLN THEN
JPEQWH'POLN ELSE (IF JPQTWH'N LE -JPMQWH'POLN THEN -JPMQWH'POLN
ELSE 0)))/(JPTSWH'DEF+JPTDWH'DEF)

PRICE (ADJUSTMENT) RATIO - CORN:
207:JPPRCN JPPRCN'DEF == JPCPCN'P*(JPQTCN'N-(IF JPQTCN'N GE JPEQCN'POLN THEN
JPEQCN'POLN ELSE (IF JPQTCN'N LE -JPMQCN'POLN THEN -JPMQCN'POLN
ELSE 0)))/(JPTSCN'DEF+JPTDCN'DEF)

PRICE (ADJUSTMENT) RATIO - OTHER COARSE GRAINS:
208:JPPRCG JPPRCG'DEF == JPCPCG'P*(JPQTCG'N-(IF JPQTCG'N GE JPEQCG'POLN THEN
JPEQCG'POLN ELSE (IF JPQTCG'N LE -JPMQCG'POLN THEN -JPMQCG'POLN
ELSE 0)))/(JPTSCG'DEF+JPTDCG'DEF)

PRICE (ADJUSTMENT) RATIO - RICE:

209:JPPRRI JPPRRI'DEF == JPCPRI'P*(JPQTRI'N-(IF JPQTRI'N GE JPEQRI'POLN THEN
JPEQRI'POLN ELSE (IF JPQTRI'N LE -JPMQRI'POLN THEN -JPMQRI'POLN
ELSE 0)))/(JPTSRI'DEF+JPTDRI'DEF)

PRICE (ADJUSTMENT) RATIO - SOYBEANS:

210:JPPRSB JPPRSB'DEF == JPCPSB'P*(JPQTSB'N-(IF JPQTSB'N GE JPEQSB'POLN THEN
JPEQSB'POLN ELSE (IF JPQTSB'N LE -JPMQSB'POLN THEN -JPMQSB'POLN
ELSE 0)))/(JPTSSB'DEF+JPTDSB'DEF)

PRICE (ADJUSTMENT) RATIO - OTHER OILSEEDS:

211:JPPROS JPPROS'DEF == JPCPOS'P*(JPQTOS'N-(IF JPQTOS'N GE JPEQOS'POLN THEN
JPEQOS'POLN ELSE (IF JPQTOS'N LE -JPMQOS'POLN THEN -JPMQOS'POLN
ELSE 0)))/(JPTSOS'DEF+JPTDOS'DEF)

PRICE (ADJUSTMENT) RATIO - SOYMEAL:

212:JPPRSM JPPRSM'DEF == JPCPSM'P*(JPQTSM'N-(IF JPQTSM'N GE JPEQSM'POLN THEN
JPEQSM'POLN ELSE (IF JPQTSM'N LE -JPMQSM'POLN THEN -JPMQSM'POLN
ELSE 0)))/(JPTSSM'DEF+JPTDSM'DEF)

PRICE (ADJUSTMENT) RATIO - SOYOIL:

213:JPPRSO JPPRSO'DEF == JPCPSO'P*(JPQTSO'N-(IF JPQTSO'N GE JPEQSO'POLN THEN
JPEQSO'POLN ELSE (IF JPQTSO'N LE -JPMQSO'POLN THEN -JPMQSO'POLN
ELSE 0)))/(JPTSSO'DEF+JPTDSO'DEF)

PRICE (ADJUSTMENT) RATIO - OTHER MEALS:

214:JPPROM JPPROM'DEF == JPCPOM'P*(JPQTOM'N-(IF JPQTOM'N GE JPEQOM'POLN THEN
JPEQOM'POLN ELSE (IF JPQTOM'N LE -JPMQOM'POLN THEN -JPMQOM'POLN
ELSE 0)))/(JPTSOM'DEF+JPTDOM'DEF)

PRICE (ADJUSTMENT) RATIO - OTHER OILS:

215:JPPROO JPPROO'DEF == JPCPOO'P*(JPQTOO'N-(IF JPQTOO'N GE JPEQOO'POLN THEN
JPEQOO'POLN ELSE (IF JPQTOO'N LE -JPMQOO'POLN THEN -JPMQOO'POLN
ELSE 0)))/(JPTSOO'DEF+JPTDOO'DEF)

PRICE (ADJUSTMENT) RATIO - DAIRY-BUTTER:

216:JPPRDB JPPRDB'DEF == JPCPDB'P*(JPQTDB'N-(IF JPQTDB'N GE JPEQDB'POLN THEN
JPEQDB'POLN ELSE (IF JPQTDB'N LE -JPMQDB'POLN THEN -JPMQDB'POLN
ELSE 0)))/(JPTSDB'DEF+JPTDDB'DEF)

PRICE (ADJUSTMENT) RATIO - DAIRY-CHEESE:

217:JPPRDC JPPRDC'DEF == JPCPDC'P*(JPQTDC'N-(IF JPQTDC'N GE JPEQDC'POLN THEN
JPEQDC'POLN ELSE (IF JPQTDC'N LE -JPMQDC'POLN THEN -JPMQDC'POLN
ELSE 0)))/(JPTSDC'DEF+JPTDDC'DEF)

PRICE (ADJUSTMENT) RATIO - DAIRY-OTHER PRODUCTS:

218:JPPRDO JPPRDO'DEF == JPCPDO'P*(JPQTDO'N-(IF JPQTDO'N GE JPEQDO'POLN THEN
JPEQDO'POLN ELSE (IF JPQTDO'N LE -JPMQDO'POLN THEN -JPMQDO'POLN
ELSE 0)))/(JPTSDO'DEF+JPTDDO'DEF)

 * EQUATIONS FOR DEMAND PRICE ESTIMATES IF TRADE IS RESTRICTED OR *
 * NON-EXISTENT *

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - BEEF+VEAL:

219:JPPEBF JPPEBF'DEF == JPPDBF'N*(1-(IF JPPRBF'DEF GT JPCLBF'P THEN JPCLBF'P
 ELSE (IF JPPRBF'DEF LT -JPCLBF'P THEN -JPCLBF'P ELSE JPPRBF'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - PORK:

220:JPPEPK JPPEPK'DEF == JPPDPK'N*(1-(IF JPPRPK'DEF GT JPCLPK'P THEN JPCLPK'P
 ELSE (IF JPPRPK'DEF LT -JPCLPK'P THEN -JPCLPK'P ELSE JPPRPK'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - MUTTON+LAMB:

221:JPPEML JPPEML'DEF == JPPDML'N*(1-(IF JPPRML'DEF GT JPCLML'P THEN JPCLML'P
 ELSE (IF JPPRML'DEF LT -JPCLML'P THEN -JPCLML'P ELSE JPPRML'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - POULTRY-MEAT:

222:JPPEPM JPPEPM'DEF == JPPDPM'N*(1-(IF JPPRPM'DEF GT JPCLPM'P THEN JPCLPM'P
 ELSE (IF JPPRPM'DEF LT -JPCLPM'P THEN -JPCLPM'P ELSE JPPRPM'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - POULTRY-EGGS:

223:JPPEPE JPPEPE'DEF == JPPDPE'N*(1-(IF JPPRPE'DEF GT JPCLPE'P THEN JPCLPE'P
 ELSE (IF JPPRPE'DEF LT -JPCLPE'P THEN -JPCLPE'P ELSE JPPRPE'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - WHEAT:

224:JPPEWH JPPEWH'DEF == JPPDWH'N*(1-(IF JPPRWH'DEF GT JPCLWH'P THEN JPCLWH'P
 ELSE (IF JPPRWH'DEF LT -JPCLWH'P THEN -JPCLWH'P ELSE JPPRWH'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - CORN:

225:JPPECN JPPECN'DEF == JPPDCN'N*(1-(IF JPPRCN'DEF GT JPCLCN'P THEN JPCLCN'P
 ELSE (IF JPPRCN'DEF LT -JPCLCN'P THEN -JPCLCN'P ELSE JPPRCN'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - OTHER COARSE GRAIN:

226:JPPECG JPPECG'DEF == JPPDCG'N*(1-(IF JPPRCG'DEF GT JPCLCG'P THEN JPCLCG'P
 ELSE (IF JPPRCG'DEF LT -JPCLCG'P THEN -JPCLCG'P ELSE JPPRCG'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - RICE:

227:JPPERI JPPERI'DEF == JPPDRI'N*(1-(IF JPPRRI'DEF GT JPCLRI'P THEN JPCLRI'P
 ELSE (IF JPPRRI'DEF LT -JPCLRI'P THEN -JPCLRI'P ELSE JPPRRI'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - SOYBEANS:

228:JPPEB JPPEB'DEF == JPPDSB'N*(1-(IF JPPRSB'DEF GT JPCLSB'P THEN JPCLSB'P
 ELSE (IF JPPRSB'DEF LT -JPCLSB'P THEN -JPCLSB'P ELSE JPPRSB'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - OTHER OILSEEDS:

229:JPPEOS JPPEOS'DEF == JPPDOS'N*(1-(IF JPPROS'DEF GT JPCLOS'P THEN JPCLOS'P
ELSE (IF JPPROS'DEF LT -JPCLOS'P THEN -JPCLOS'P ELSE JPPROS'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - SOYMEAL:

230:JPPESM JPPESM'DEF == JPPDSM'N*(1-(IF JPPRSM'DEF GT JPCLSM'P THEN JPCLSM'P
ELSE (IF JPPRSM'DEF LT -JPCLSM'P THEN -JPCLSM'P ELSE JPPRSM'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - SOYOIL:

231:JPPESO JPPESO'DEF == JPPDSO'N*(1-(IF JPPRSO'DEF GT JPCLSO'P THEN JPCLSO'P
ELSE (IF JPPRSO'DEF LT -JPCLSO'P THEN -JPCLSO'P ELSE JPPRSO'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - OTHER MEALS:

232:JPPEOM JPPEOM'DEF == JPPDOM'N*(1-(IF JPPROM'DEF GT JPCLOM'P THEN JPCLOM'P
ELSE (IF JPPROM'DEF LT -JPCLOM'P THEN -JPCLOM'P ELSE JPPROM'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - OTHER OILS:

233:JPPEOO JPPEOO'DEF == JPPDOO'N*(1-(IF JPPROO'DEF GT JPCLOO'P THEN JPCLOO'P
ELSE (IF JPPROO'DEF LT -JPCLOO'P THEN -JPCLOO'P ELSE JPPROO'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - DAIRY-BUTTER:

234:JPPEDB JPPEDB'DEF == JPPddb'N*(1-(IF JPPRDB'DEF GT JPCLDB'P THEN JPCLDB'P
ELSE (IF JPPRDB'DEF LT -JPCLDB'P THEN -JPCLDB'P ELSE JPPRDB'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - DAIRY-CHEESE:

235:JPPEDC JPPEDC'DEF == JPPDDC'N*(1-(IF JPPRDC'DEF GT JPCLDC'P THEN JPCLDC'P
ELSE (IF JPPRDC'DEF LT -JPCLDC'P THEN -JPCLDC'P ELSE JPPRDC'DEF))
)

PRICE ESTIMATE (DEMAND) WITH RESTRICTED TRADE - DAIRY-OTHER PROD.:

236:JPPEDO JPPEDO'DEF == JPPDDO'N*(1-(IF JPPRDO'DEF GT JPCLDO'P THEN JPCLDO'P
ELSE (IF JPPRDO'DEF LT -JPCLDO'P THEN -JPCLDO'P ELSE JPPRDO'DEF))
)

PRICE CONSTRAINT (DEFINITION) - BEEF+VEAL:

237:JPPCBF JPPCBF'DEF == IF JPPEBF'DEF LT JPPTBF+JPMTBF'N+JPTMBF'POLN+
JPTCBF'POLN AND JPPEBF'DEF GT JPPTBF-JPMTBF'N+JPMDBF'N-JPTEBF'POLN
+JPTCBF'POLN OR JPQTFB'N GE JPEQBF'POLN OR JPQTFB'N LE -
JPMQBF'POLN THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - PORK:

238:JPPCPK JPPCPK'DEF == IF JPPEPK'DEF LT JPPTPK+JPMTPK'N+JPTMPK'POLN+
JPTCPK'POLN AND JPPEPK'DEF GT JPPTPK-JPMTPK'N+JPMDBK'N-JPTEPK'POLN
+JPTCPK'POLN OR JPQTPK'N GE JPEQPK'POLN OR JPQTPK'N LE -
JPMQPK'POLN THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - MUTTON+LAMB:

239:JPPCML JPPCML'DEF == IF JPPEML'DEF LT JPPTML+JPMTML+JPTMML'POLN+
JPTCML'POLN AND JPPEML'DEF GT JPPTML-JPMTML+JPMDBL-JPTEML'POLN+
JPTCML'POLN OR JPQTML'N GE JPEQML'POLN OR JPQTML'N LE -JPMQML'POLN
THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - POULTRY-MEAT:
 240:JPPCPM JPPCPM'DEF == IF JPPEPM'DEF LT JPPTPM+JPMTPM'N+JPTMPM'POLN+
 JPTCPM'POLN AND JPPEPM'DEF GT JPPTPM-JPMTPM'N+JPMDPM'N-JPTEPM'POLN
 +JPTCPM'POLN OR JPQTPM'N GE JPEQPM'POLN OR JPQTPM'N LE -
 JPMQPM'POLN THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - POULTRY-EGGS:
 241:JPPCPE JPPCPE'DEF == IF JPPEPE'DEF LT JPPTPE+JPMTPE'N+JPTMPE'POLN+
 JPTCPE'POLN AND JPPEPE'DEF GT JPPTPE-JPMTPE'N+JPMDPE'N-JPTEPE'POLN
 +JPTCPE'POLN OR JPQTPE'N GE JPEQPE'POLN OR JPQTPE'N LE -
 JPMQPE'POLN THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - WHEAT:
 242:JPPCWH JPPCWH'DEF == IF JPPEWH'DEF LT JPPTWH+JPMTWH'N+JPTMWH'POLN+
 JPTCWH'POLN AND JPPEWH'DEF GT JPPTWH-JPMTWH'N+JPMDWH-JPTEWH'POLN+
 JPTCWH'POLN OR JPQTWH'N GE JPEQWH'POLN OR JPQTWH'N LE -JPMQWH'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - CORN:
 243:JPPCCN JPPCCN'DEF == IF JPPECN'DEF LT JPPTCN+JPMTCN+JPTMCN'POLN+
 JPTCCN'POLN AND JPPECN'DEF GT JPPTCN-JPMTCN+JPMDCN-JPTECN'POLN+
 JPTCCN'POLN OR JPQTCN'N GE JPEQCN'POLN OR JPQTCN'N LE -JPMQCN'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - OTHER COARSE GRAINS:
 244:JPPCCG JPPCCG'DEF == IF JPPECG'DEF LT JPPTCG+JPMTCG'N+JPTMCG'POLN+
 JPTCCG'POLN AND JPPECG'DEF GT JPPTCG-JPMTCG'N+JPMDCG-JPTECG'POLN+
 JPTCCG'POLN OR JPQTCG'N GE JPEQCG'POLN OR JPQTCG'N LE -JPMQCG'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - RICE:
 245:JPPCRI JPPCRI'DEF == IF JPPERI'DEF LT JPPTRI+JPMTRI+JPTMRI'POLN+
 JPTCRI'POLN AND JPPERI'DEF GT JPPTRI-JPMTRI+JPMDRI-JPTERI+
 JPTCRI'POLN OR JPQTRI'N GE JPEQRI'POLN OR JPQTRI'N LE -JPMQRI'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - SOYBEANS:
 246:JPPCSB JPPCSB'DEF == IF JPPESB'DEF LT JPPTSB+JPMTSB'N+JPTMSB'POLN+
 JPTCSB'POLN AND JPPESB'DEF GT JPPTSB-JPMTSB'N+JPMDSB-JPTESB'POLN+
 JPTCSB'POLN OR JPQTSB'N GE JPEQSB'POLN OR JPQTSB'N LE -JPMQSB'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - OTHER OILSEEDS:
 247:JPPCOS JPPCOS'DEF == IF JPPEOS'DEF LT JPPTOS+JPMTOS+JPTMOS'POLN+
 JPTCOS'POLN AND JPPEOS'DEF GT JPPTOS-JPMTOS+JPMDOS-JPTEOS'POLN+
 JPTCOS'POLN OR JPQTOS'N GE JPEQOS'POLN OR JPQTOS'N LE -JPMQOS'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - SOYMEAL:
 248:JPPCSM JPPCSM'DEF == IF JPPESM'DEF LT JPPTSM+JPMTSM'N+JPTMSM'POLN+
 JPTCSM'POLN AND JPPESM'DEF GT JPPTSM-JPMTSM'N+JPMDSM-JPTESM'POLN+
 JPTCSM'POLN OR JPQTSM'N GE JPEQSM'POLN OR JPQTSM'N LE -JPMQSM'POLN
 THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - SOYOIL:

249:JPPCSO JPPCSO'DEF == IF JPPEO'DEF LT JPPTSO+JPMTSO'N+JPTMSO'POLN+
JPTCSO'POLN AND JPPEO'DEF GT JPPTSO-JPMTSO'N+JPMDSO-JPTESO'POLN+
JPTCSO'POLN OR JPQTSO'N GE JPEQSO'POLN OR JPQTSO'N LE -JPMQSO'POLN
THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - OTHER MEALS:

250:JPPCOM JPPCOM'DEF == IF JPPEOM'DEF LT JPPTOM+JPMTOM'N+JPTMOM'POLN+
JPTCOM'POLN AND JPPEOM'DEF GT JPPTOM-JPMTOM'N+JPMDOM-JPTEOM'POLN+
JPTCOM'POLN OR JPQTOM'N GE JPEQOM'POLN OR JPQTOM'N LE -JPMQOM'POLN
THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - OTHER OILS:

251:JPPCOO JPPCOO'DEF == IF JPPEOO'DEF LT JPPTOO+JPMTOO+JPTMOO'POLN+
JPTCOO'POLN AND JPPEOO'DEF GT JPPTOO-JPMTOO+JPMDOO-JPTEOO'POLN+
JPTCOO'POLN OR JPQTOO'N GE JPEQOO'POLN OR JPQTOO'N LE -JPMQOO'POLN
THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - DAIRY-BUTTER:

252:JPPCDB JPPCDB'DEF == IF JPPEDB'DEF LT JPPTDB+JPMTDB'N+JPTMDB'POLN+
JPTCDB'POLN AND JPPEDB'DEF GT JPPTDB-JPMTDB'N+JPMDDB'N-JPTEDB'POLN+
JPTCDB'POLN OR JPQTDB'N GE JPEQDB'POLN OR JPQTDB'N LE -
JPMQDB'POLN THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - DAIRY-CHEESE:

253:JPPCDC JPPCDC'DEF == IF JPPEDC'DEF LT JPPTDC+JPMTDC'N+JPTMDC'POLN+
JPTCDC'POLN AND JPPEDC'DEF GT JPPTDC-JPMTDC'N+JPMDDC-JPTEDC'POLN+
JPTCDC'POLN OR JPQTD'C'N GE JPEQDC'POLN OR JPQTD'C'N LE -JPMQDC'POLN
THEN 1 ELSE 0

PRICE CONSTRAINT (DEFINITION) - DAIRY-OTHER PRODUCTS:

254:JPPCDO JPPCDO'DEF == IF JPPEDO'DEF LT JPPTDO+JPMTDO'N+JPTMDO'POLN+
JPTCDO'POLN AND JPPEDO'DEF GT JPPTDO-JPMTDO'N+JPMDDO'N-JPTEDO'POLN
+JPTCDO'POLN OR JPQTD'O'N GE JPEQDO'POLN OR JPQTD'O'N LE -
JPMQDO'POLN THEN 1 ELSE 0

* DEMAND PRICE EQUATIONS - TRADE LINKED OR DOMESTIC MARKET CLEARING *
* ESTIMATES *
* *

PRICE (DEMAND) - BEEF+VEAL:

255:JPPDBF JPPDBF'N = IF JPPCBF'DEF EQ 1 THEN ABSV'F(JPPEBF'DEF) ELSE (IF
JPQTB'N LT 0 THEN ABSV'F(JPPTBF+JPMTBF'N+JPTMBF'POLN+JPTCBF'POLN)
ELSE ABSV'F(JPPTBF-JPMTBF'N+JPMDBF'N-JPTEBF'POLN+JPTCBF'POLN))

PRICE (DEMAND) - PORK:

256:JPPDPK JPPDPK'N = IF JPPCPK'DEF EQ 1 THEN ABSV'F(JPPEPK'DEF) ELSE (IF
JPQTPK'N LT 0 THEN ABSV'F(JPPTPK+JPMTPK'N+JPTMPK'POLN+JPTCPK'POLN)
ELSE ABSV'F(JPPTPK-JPMTPK'N+JPMDPK'N-JPTEPK'POLN+JPTCPK'POLN))

PRICE (DEMAND) - MUTTON+LAMB:

257:JPPDML JPPDML'N = IF JPPCML'DEF EQ 1 THEN ABSV'F(JPPEML'DEF) ELSE (IF
JPQTML'N LT 0 THEN ABSV'F(JPPTML+JPMTML+JPTMML'POLN+JPTCML'POLN)
ELSE ABSV'F(JPPTML-JPMTML+JPMDDL-JPTEML'POLN+JPTCML'POLN))

PRICE (DEMAND) - DAIRY-MILK:

258:JPPDDM JPPDDM'N = ABSV'F(JPPDDMI'C*((JPQSDB'N*JPPSDB'DEF+JPQSDC'N*JPPSDC'DEF+JPQSDO'N*JPPSDO'DEF)/JPQMDM'DEF)+JPTCDM'POLN+JPMDDM'N+JPTPDM'POLN)

PRICE (DEMAND) - POULTRY-MEAT:

259:JPPDPM JPPDPM'N = IF JPCCPM'DEF EQ 1 THEN ABSV'F(JPPEPM'DEF) ELSE (IF JPQTPM'N LT 0 THEN ABSV'F(JPPTPM+JPMTPM'N+JPTMPM'POLN+JPTCPM'POLN) ELSE ABSV'F(JPPTPM-JPMTPM'N+JPMDDM'N-JPTEPM'POLN+JPTCPM'POLN))

PRICE (DEMAND) - POULTRY-EGGS:

260:JPPDPE JPPDPE'N = IF JPCCPE'DEF EQ 1 THEN ABSV'F(JPPEPE'DEF) ELSE (IF JPQTPM'N LT 0 THEN ABSV'F(JPPTPE+JPMTPE'N+JPTMPE'POLN+JPTCPE'POLN) ELSE ABSV'F(JPPTPE-JPMTPE'N+JPMDDM'N-JPTEPE'POLN+JPTCPE'POLN))

PRICE (DEMAND) - WHEAT:

261:JPPDWH JPPDWH'N = IF JPCCWH'DEF EQ 1 THEN ABSV'F(JPPEWH'DEF) ELSE (IF JPQTPM'N LT 0 THEN ABSV'F(JPPTWH+JPMTWH'N+JPTMWH'POLN+JPTCWH'POLN) ELSE ABSV'F(JPPTWH-JPMTWH'N+JPMDDM'N-JPTEWH'POLN+JPTCWH'POLN))

PRICE (DEMAND) - CORN:

262:JPPDCN JPPDCN'N = IF JPCCCN'DEF EQ 1 THEN ABSV'F(JPPECN'DEF) ELSE (IF JPQTCN'N LT 0 THEN ABSV'F(JPPTCN+JPMTCN+JPTMCN'POLN+JPTCCN'POLN) ELSE ABSV'F(JPPTCN-JPMTCN+JPMDDM'N-JPTECN'POLN+JPTCCN'POLN))

PRICE (DEMAND) - OTHER COARSE GRAINS:

263:JPPDCG JPPDCG'N = IF JPCCCG'DEF EQ 1 THEN ABSV'F(JPPECG'DEF) ELSE (IF JPQTCG'N LT 0 THEN ABSV'F(JPPTCG+JPMTCG'N+JPTMCG'POLN+JPTCCG'POLN) ELSE ABSV'F(JPPTCG-JPMTCG'N+JPMDDM'N-JPTECG'POLN+JPTCCG'POLN))

PRICE (DEMAND) - RICE:

264:JPPDRI JPPDRI'N = IF JPCCRI'DEF EQ 1 THEN ABSV'F(JPPERI'DEF) ELSE (IF JPQTRI'N LT 0 THEN ABSV'F(JPPTRI+JPMTRI+JPTMRI'POLN+JPTCRI'POLN) ELSE ABSV'F(JPPTRI-JPMTRI+JPMDDM'N-JPTMRI'POLN+JPTCRI'POLN))

PRICE (DEMAND) - SOYBEANS:

265:JPPDSB JPPDSB'N = IF JPCCSB'DEF EQ 1 THEN ABSV'F(JPPESB'DEF) ELSE (IF JPQTSB'N LT 0 THEN ABSV'F(JPPTSB+JPMTSB'N+JPTMSB'POLN+JPTCSB'POLN) ELSE ABSV'F(JPPTSB-JPMTSB'N+JPMDDM'N-JPTESB'POLN+JPTCSB'POLN))

PRICE (DEMAND) - OTHER OILSEEDS:

266:JPPDOS JPPDOS'N = IF JPCCOS'DEF EQ 1 THEN ABSV'F(JPPEOS'DEF) ELSE (IF JPQTOS'N LT 0 THEN ABSV'F(JPPTOS+JPMTOS+JPTMOS'POLN+JPTCOS'POLN) ELSE ABSV'F(JPPTOS-JPMTOS+JPMDDM'N-JPTEOS'POLN+JPTCOS'POLN))

PRICE (DEMAND) - SOYMEAL:

267:JPPDSM JPPDSM'N = IF JPCCSM'DEF EQ 1 THEN ABSV'F(JPPESM'DEF) ELSE (IF JPQTSM'N LT 0 THEN ABSV'F(JPPTSM+JPMTSM'N+JPTMSM'POLN+JPTCSM'POLN) ELSE ABSV'F(JPPTSM-JPMTSM'N+JPMDDM'N-JPTESM'POLN+JPTCSM'POLN))

PRICE (DEMAND) - SOYOIL:

268:JPPDSO JPPDSO'N = IF JPCCSO'DEF EQ 1 THEN ABSV'F(JPPESO'DEF) ELSE (IF JPQTSO'N LT 0 THEN ABSV'F(JPPTSO+JPMTSO'N+JPTMSO'POLN+JPTCSO'POLN) ELSE ABSV'F(JPPTSO-JPMTSO'N+JPMDDM'N-JPTESO'POLN+JPTCSO'POLN))

PRICE (DEMAND) - OTHER MEALS:

269:JPPDOM JPPDOM'N = IF JPPCOM'DEF EQ 1 THEN ABSV'F(JPPEOM'DEF) ELSE (IF
JPQTOM'N LT 0 THEN ABSV'F(JPPTOM+JPMTOM'N+JPTMOM'POLN+JPTCOM'POLN)
ELSE ABSV'F(JPPTOM-JPMTOM'N+JPMDOM-JPTEOM'POLN+JPTCOM'POLN))

PRICE (DEMAND) - OTHER OILS:

270:JPPDOO JPPDOO'N = IF JPPCOO'DEF EQ 1 THEN ABSV'F(JPPEOO'DEF) ELSE (IF
JPQTOO'N LT 0 THEN ABSV'F(JPPTOO+JPMTOO+JPTMOO'POLN+JPTCOO'POLN)
ELSE ABSV'F(JPPTOO-JPMTOO+JPMDOO-JPTEOO'POLN+JPTCOO'POLN))

PRICE (DEMAND) - DAIRY-BUTTER:

271:JPPDDB JPPDDB'N = IF JPPCDB'DEF EQ 1 THEN ABSV'F(JPPEDB'DEF) ELSE (IF
JPQTDB'N LT 0 THEN ABSV'F(JPPTDB+JPMTDB'N+JPTMDB'POLN+JPTCDB'POLN)
ELSE ABSV'F(JPPTDB-JPMTDB'N+JPMDDDB'N-JPTEDB'POLN+JPTCDB'POLN))

PRICE (DEMAND) - DAIRY-CHEESE:

272:JPPDDC JPPDDC'N = IF JPPCDC'DEF EQ 1 THEN ABSV'F(JPPEDC'DEF) ELSE (IF
JPQTDC'N LT 0 THEN ABSV'F(JPPTDC+JPMTDC'N+JPTMDC'POLN+JPTCDC'POLN)
ELSE ABSV'F(JPPTDC-JPMTDC'N+JPMDDC-JPTEDC'POLN+JPTCDC'POLN))

PRICE (DEMAND) - DAIRY-OTHER PRODUCTS:

273:JPPDDO JPPDDO'N = IF JPPCDO'DEF EQ 1 THEN ABSV'F(JPPEDO'DEF) ELSE (IF
JPQTD0'N LT 0 THEN ABSV'F(JPPTDO+JPMTDO'N+JPTMDO'POLN+JPTCDO'POLN)
ELSE ABSV'F(JPPTDO-JPMTDO'N+JPMDDO'N-JPTEDO'POLN+JPTCDO'POLN))

TRADE PRICE LINKAGE - BEEF+VEAL:

274:JPPTBF JPPTBF = WDPTBF

TRADE PRICE LINKAGE - PORK:

275:JPPTPK JPPTPK = WDPTPK

TRADE PRICE LINKAGE - MUTTON+LAMB:

276:JPPTML JPPTML = WDPTML

TRADE PRICE LINKAGE - POULTRY-MEAT:

277:JPPTPM JPPTPM = WDPTPM

TRADE PRICE LINKAGE - POULTRY-EGGS:

278:JPPTPE JPPTPE = WDPTPE

TRADE PRICE LINKAGE - WHEAT:

279:JPPTWH JPPTWH = WDPTWH

TRADE PRICE LINKAGE - CORN:

280:JPPTCN JPPTCN = WDPTCN

TRADE PRICE LINKAGE - OTHER COARSE GRAINS:

281:JPPTCG JPPTCG = WDPTCG

TRADE PRICE LINKAGE - RICE:

282:JPPTRI JPPTRI = WDPTRI

TRADE PRICE LINKAGE - SOYBEANS:

283:JPPTSB JPPTSB = WDPTSB

TRADE PRICE LINKAGE - OTHER OILSEEDS:
284:JPPTOS JPPTOS = WDPTOS

TRADE PRICE LINKAGE - SOYMEAL:
285:JPPTSM JPPTSM = WDPTSM

TRADE PRICE LINKAGE - SOYOIL:
286:JPPTSO JPPTSO = WDPTSO

TRADE PRICE LINKAGE - OTHER MEALS:
287:JPPTOM JPPTOM = WDPTOM

TRADE PRICE LINKAGE - OTHER OILS:
288:JPPTOO JPPTOO = WDPTOO

TRADE PRICE LINKAGE - DAIRY-BUTTER:
289:JPPTDB JPPTDB = WDPTDB

TRADE PRICE LINKAGE - DAIRY-CHEESE:
290:JPPTDC JPPTDC = WDPTDC

TRADE PRICE LINKAGE - DAIRY-OTHER PRODUCTS:
291:JPPTDO JPPTDO = WDPTDO

SUFFIXES

ENDOGENOUS: 'N 'NX 'NXS 'NPOL

DEFINITION: 'DEF

EXOGENOUS: 'X 'XN 'XNS 'XP

POLICY: 'POL 'POLN 'POLP

FUNCTION: 'F

COEFFICIENT: 'C

PARAMETER: 'P 'PX 'PPOL

APPENDIX B

Table 1--Livestock feed cost parameters, Japan

	FEED COST	FEED COST	FEED COST
	WEIGHT FOR	WEIGHT FOR CORN	WEIGHT FOR
	WHEAT (FC**WH)	(FC**CN)	OTHER COARSE
			GRAINS (FC**CG)
1 BEEF+VEAL (BF) --	0.06088	0.1949	0.3321
2 PORK (PK) -----	0.03372	0.34145	0.34408
3 MUTTON+LAMB (ML)	0.06088	0.1949	0.3321
4 DAIRY-MILK (DM) -	0.00242	0.11559	0.25128
5 POULTRY-MEAT (PM)	0.00715	0.47981	0.1931
6 POULTRY-EGGS (PE)	0.00715	0.47981	0.1931

	FEED COST	FEED COST
	WEIGHT FOR	WEIGHT FOR
	SOYMEAL	OTHER MEALS
	(FC**SM)	(FC**OM)
1 BEEF+VEAL (BF) --	0.05037	0.02865
2 PORK (PK) -----	0.12252	0.00932
3 MUTTON+LAMB (ML)	0.05037	0.02865
4 DAIRY-MILK (DM) -	0.11329	0.08097
5 POULTRY-MEAT (PM)	0.11081	0.01479
6 POULTRY-EGGS (PE)	0.11081	0.01479

Table 2--Feed demand parameters, Japan

	LIVESTOCK PRICE	WEIGHTS FOR
	INDEX WEIGHTS	CALCULATING
	FOR FEED DEMAND	GRAIN CONSUMING
	(LPWT**)	ANIMAL UNIT
		(GCAU)
1 BEEF+VEAL (BF) --	0.15574	0.10237
2 PORK (PK) -----	0.3011	0.30933
3 MUTTON+LAMB (ML)	0.	0.
4 DAIRY-MILK (DM) -	0.22726	0.07806
5 POULTRY-MEAT (PM)	0.12229	0.20424
6 POULTRY-EGGS (PE)	0.1936	0.306

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